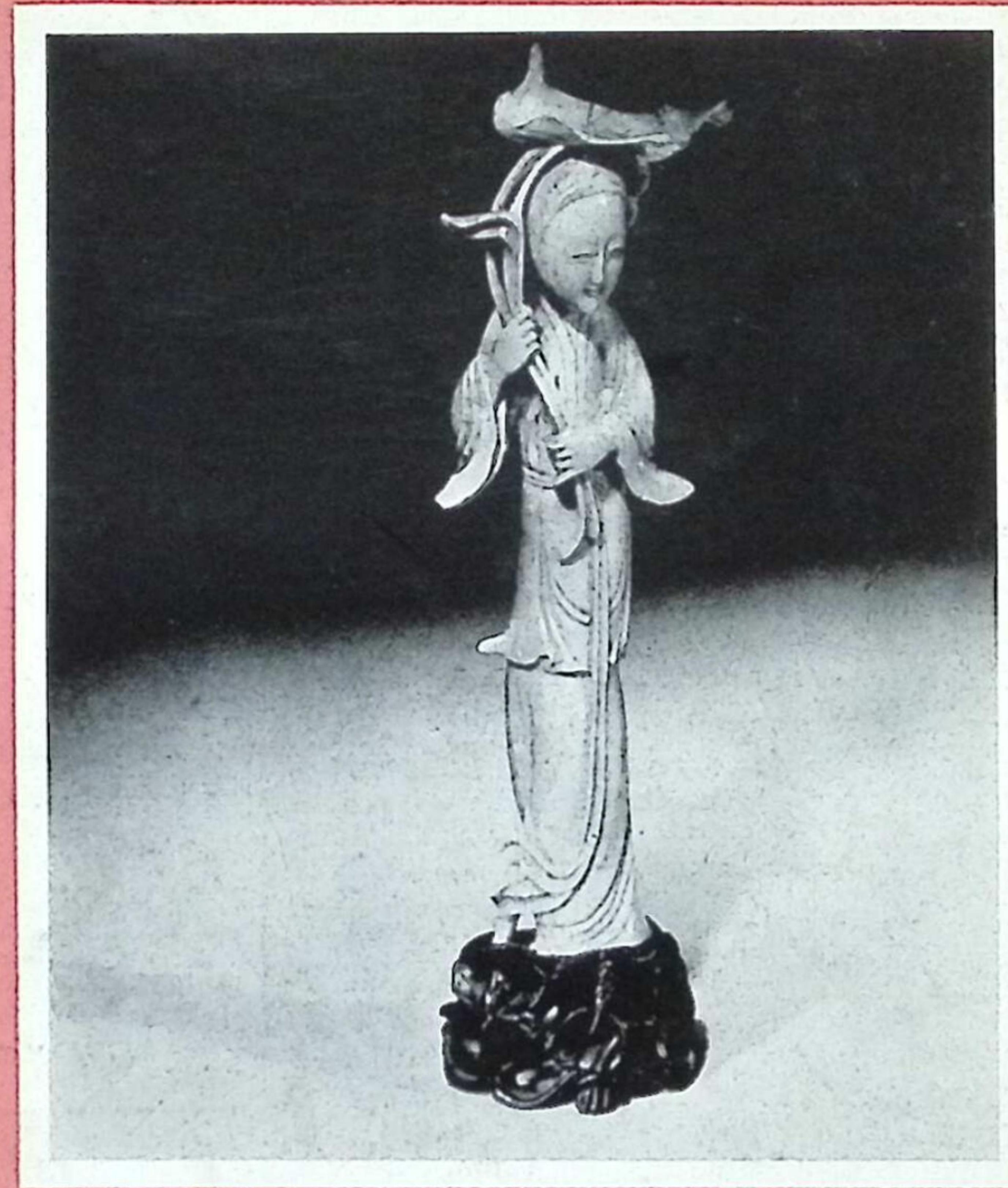


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The

Lapidary Journal

AUGUST, 1952



GODDESS OF MERCY
Figure carved in coral
From the collection of Aletah Quick

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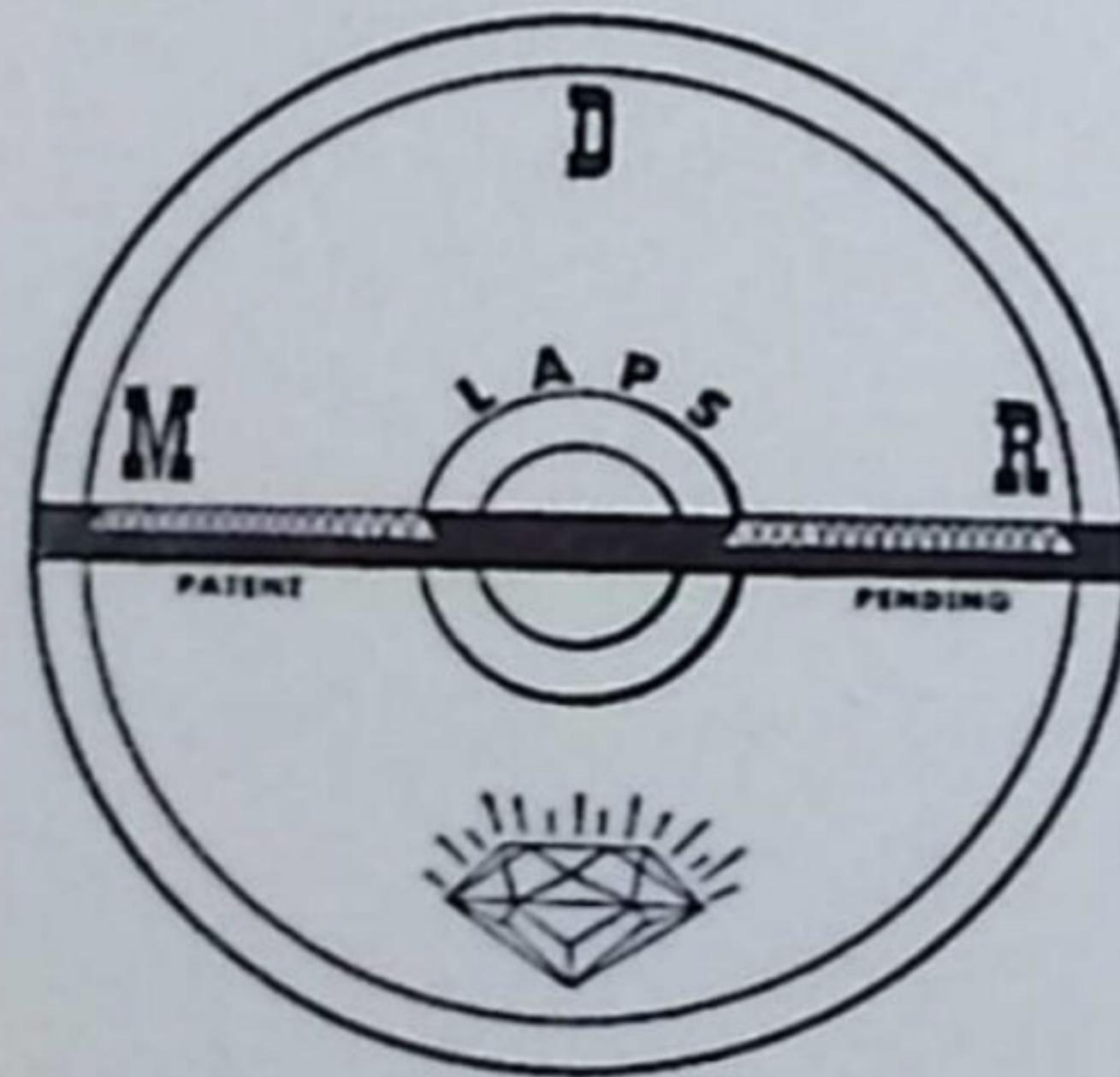
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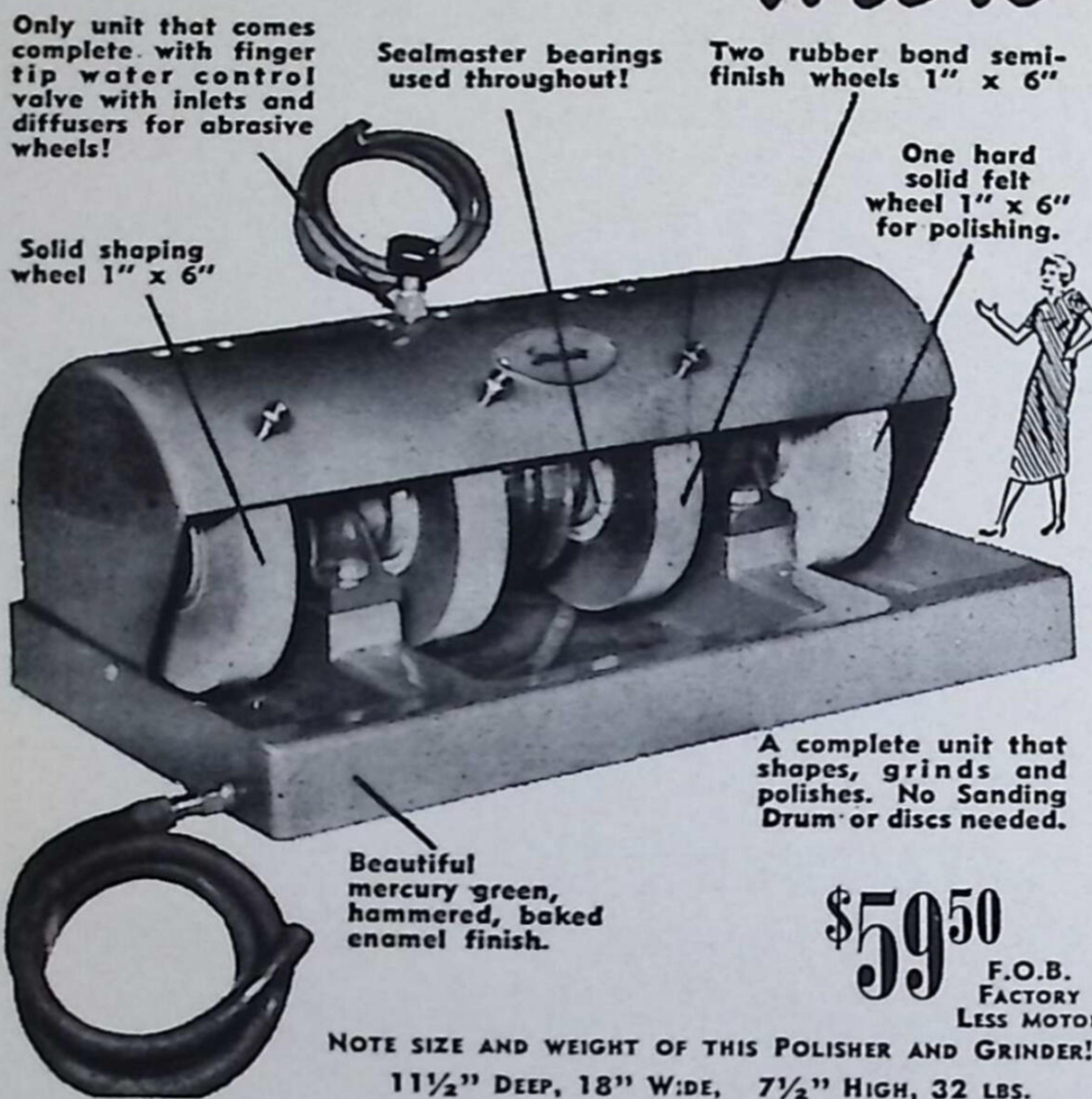
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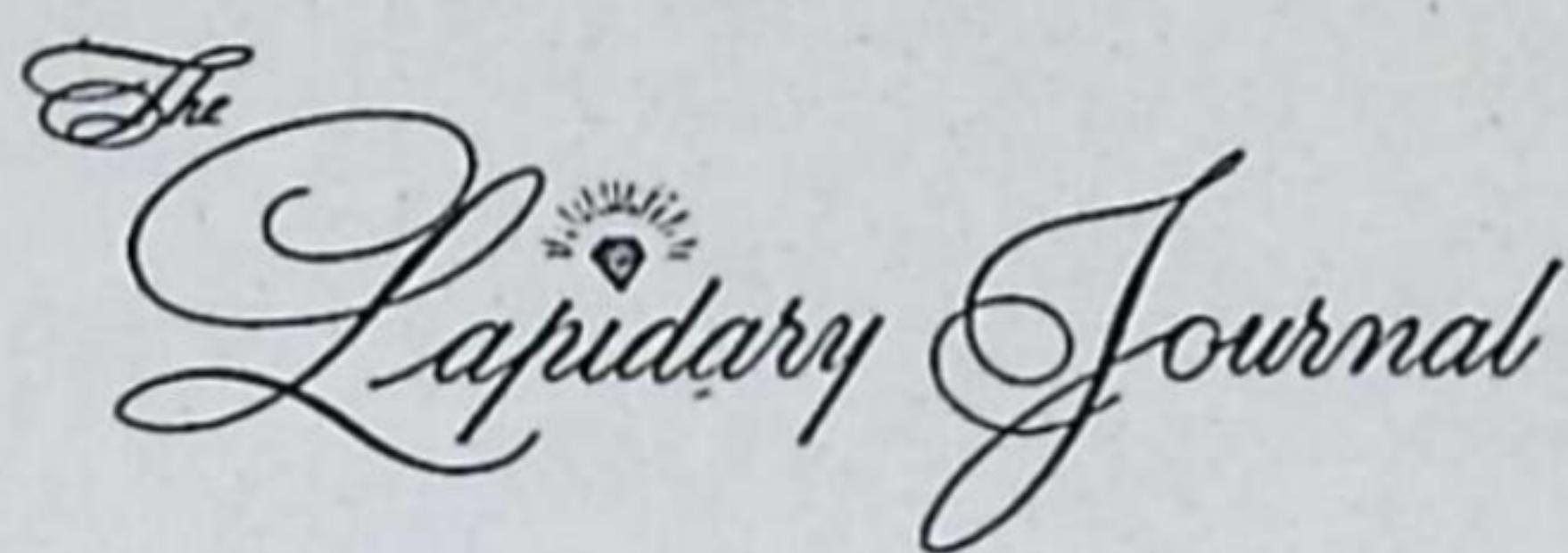
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THIRTY-FIRST ISSUE

PUBLISHED BI-MONTHLY ON THE FIRST OF FEB.-APR.-JUNE-AUG.-OCT.-DEC.

Volume Six

August, 1952

Number Three

Old Pennsylvania Dutch adage—
Ve get so soon old . . . und so late schmart

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Where the summer spends the winter

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• Dry Drum Sanding and Methods of Dopping

By ROBERT D. ROOTS

3147 West 39th Ave., Denver 11, Colorado

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In this article one of the most widely known of the old timers, and a previous contributor, reviews work with the dry sanders and discusses his dopping methods. Contrary to popular impression the lapidary fraternity has not adopted wet sanding in toto—and wet sanding is not new. A review of dry sanding methods is timely.

Following are the results of my work using a drum sander for many years. They are just one person's opinion and are to be taken that way. Methods are changing all the time and new ways are being found to do the same work quicker and better.

The sander that I have been working with is one for which I had the shaft made to order. The rest of it, with the exception of two pillow blocks, was made by myself. The shaft is 24" long, with two sanding drums mounted in the center. The drums are 10" across and 2" in width, mounted 4" apart by means of a 4" maple spacer. They are held tight by a right and left threaded nut on the ends. Outside of the drums are the two pillow blocks with a collar on both sides of them. The collars act as a means of taking end-play out of the shaft and to keep the dust out of the bearings. In using zerk type oilers, use those with a cap. This type is used on water pumps of automobiles. Both ends of the shaft are threaded, one right and the other left. The one to my left has a small silicon wheel mounted on it. The wheels used are my wornout grinding wheels. The other end has a three step V pulley next to the pillow block. The end is used for several tools, a disk sander, a concave sander and a small lap for use when I do not want to set up the large lap.

The left hand drum is covered with $\frac{1}{4}$ " felt and the right with $\frac{1}{4}$ " sponge rubber. The felt covered drum is used with No. 120 grit cloth or paper. The sponge rubber covered drum is used as the finish drum with the finer grits—No. 220 for agate and up to No. 600 for jade. I had trouble in keeping the felt

and rubber on until I used what is called divine glue. I was told about this by a friend and thought it was a joke but when I asked for it I got it.

For agate I use only two grits No. 120 and No. 220. For rough sanding I use No. 120 with a paper back. I have found this better as it does not stretch and stays tight. For finish sanding I use No. 220 grit, keeping a well worn No. 220 grit cloth for the final sanding. For jade, after using the No. 120 and No. 220, I set the two wheels up with No. 400 and No. 600 grit. The grits must be kept clean. If using your saw at the same time be sure to wash your hands as the oil on them will obscure the stone surface, making it hard to see what you are doing. Dopping wax will kill the grit so it will not cut. Oil and wax can be worked out of the cloth.

Now we are ready to start sanding cabs. Use the left hand drum with No. 120 grit with a paper back. We can use one step higher on our pulley, as we are just going to remove any wax that might get on our grit and to take out any flat centers we may have left from our fine grinding. To remove the excess wax hold the dop stick across the drum, allowing the edge of the grit to grind away any wax that might get on our sanding surface. I try to keep the wax back about $\frac{1}{8}$ " from the edge of the cab. Small cabs of course are closer to the edge. Then on the rest of the sanding surface take out any flat centers you may have. The center can stand the higher speed of sanding but use care not to heat your cab too much and do not try to work to the edge. The flat center comes out much

faster at the higher speed and if there is any tell-tale mark of just a fair cutter it is to find a flat center on a highly polished cab. A rounded center is much easier to polish. Removing the wax insures that it will not get on our sanding surfaces and dull them. Dull grits will burn much quicker than sharp grits. So do not try to use your rough grit too long. The cost of a 2" belt for a 10" drum is only about 5c and the time of changing only a minute or two. One fleck removed from the center of a cab by heat may cause more trouble than that of changing belts, to say nothing of the chance of losing the cab. Some materials may not be able to stand this higher speed. On these use lower speed with sharp roughing grits and well whitened finish grits.

Now slow your wheels down by changing the belt down one pulley step. This will cut down the heat of sanding. I have not tried to give wheel speeds as few of us have the same touch or equipment.

There are several ways of holding the cab while sanding. I have seen good cutters sand to the bottom and others work toward the top. We all have to work out the way that is best for us. I use a 3/16" dop stick, 4 1/8" long because this just fits my hand. The small stick is better if I want to spin it, as in making a round cab. I use the same size stick on both small and large cabs. I use two cabs on each stick and sand by turning to distribute the heat. I start sanding on the top, working toward the edge, then turn the cab with the wheel and sand the edge etc. I sand one top, reverse the stick and sand the other top, then the edge and so on. This reduces the heat. After the rough sanding, move across to the No. 220 grit drum. If it is new and sharp use as rough grit until it takes on a white powdered look. Where it has a white powdered look is where your final semi-polished finish will be found. I have used this white streak when it is only 1/8" wide but on working it will spread. Use the grit outside of this white streak for fine sanding, moving into the white streak for your finish sanding. I use two stones to dress my grits. Sometimes a few coarse grains will remain on the edge to put a scratch on the cab. These can be removed by holding a piece of sapphire against the edge. If I get a little

wax or a speck of oil on the belt I work it out with a piece of obsidian. This will restore the white streak for a while and clean the belt.

Quite thin slabs can be worked on the dry drum sander if we do not let our heat build up. Be sure not to use too dull a sanding grit on very thin slabs. Keep turning the slab to keep the heat even. Where it is necessary to sand the center be sure to carry the heat to the edge. If the heat builds up in the center the edge will fracture.

I like to rough thunder eggs and I get from 30 to 50 halves on one rough grit belt. For this the paper backed belt is much the best. First the rough edge remaining from the finish of the saw cut is removed by the small grinding wheel on the end. In sanding eggs a higher speed can be used resulting in faster sanding. Finish on the No. 220 wheel.

Some material must be polished with an eye for the grain. Tigereye should be sanded across the grain or at an oblique angle. As a rule I finish sanding the long way of the cab. I have found that it will polish quicker. The concave disk on the end is used for turquoise and is much better than the drum for this material.

If the dust bothers you put a hood up the back and over the top, this will stop the dust throwing up into your face. A suction fan is still better.

I hope someday to build another sander, using ball bearings and aluminum drums but I will still keep it in somewhat the same shape as the one I have now. For speed and limited space it is hard to beat the dry drum sander.

DOPPING METHODS

I believe I get the most questions on what is one of the simplest parts of stone cutting. This is dopping, a simple operation that can be done in many ways.

First we must understand that cabs are not as sensitive as many writers would have us believe. Most of them can be plunged from room temperature into hot or ice water without cracking or checking. When I think there is danger of checking I may dip it in and out quickly to sort of pre-warm or pre-cool the cab before placing it in hot or cold water. There are some materials that should not be heated or cooled

but they can be dopped without doing either. It should be remembered that wax will not stick to a cold stone. This means that all cabs must be heated to a degree that wax will stick to them.

The ways of dopping are many. I have one friend who used to warm up his cabs, many of them Utah variscite, with a gasoline torch until they were hot enough to melt the wax on the dop stick. Other friends used a coal-oil stove with a plate on top of it. There was a hole in the center of the plate where they placed the wax receptacle. The cabs were warmed on the outside of the plate. Another way is to hold the waxed dop stick and the cab near the flame from an alcohol torch until both are warm enough to stick together. Then several cabs may be placed to warm on a piece of metal bent to form a shelf over the torch while heating the dopstick by holding it to the side of the flame. This same bent piece of iron can be used over a gas or electric plate. Then we read about using a heat lamp to warm the cabs. I have a friend in Nebraska who used Duco cement to dop all his stones. He had to use a large dop stick and allow them to set. This he did by placing the sticks in holes in a board over night. To remove the cabs he placed them in acetone overnight and in the morning picked his cabs from the bottom of the jar. I have never tried this but it does not sound bad.

I use a two burner gas plate. One burner has been covered with a piece of iron about 18 x 6". The ends have been turned down about 4½" to form legs. This forms a warming shelf. The other burner is covered with a pan on which the wax holder is placed; in my case, a sardine can. The wax is heated until it is soft and rather thin. It must not be boiled as that spoils the wax. The flame is turned on very low under the warming plate as all we want to do is get it fairly hot. The cabs are taken out of a pan of water at room temperature and placed wet on the plate. I think this placing of the wet cab gives it a chance to adjust itself while drying and

warming. If the cab gets too hot it makes trouble as it has to be handled too fast; if too cold it will not stick to the dop. Then place your dop stick in the hot wax for a second and stick on the warm cab. If the cab is warm enough you can pick it up with the dop stick. Then a quick dip into the water or wet your fingers and form the wax around the cab. Try to form the wax away from the edge and get the cab as well centered as you can. If a little wax does get over the edge it can be taken off on the sander.

Almost anything will do for the size and kind of stick, but since hardwood dowels are so handy in three foot lengths it is a simple matter to cut them off to the length you want.

To remove the cab from the wax I used to have a small can of water just about at the boiling point. I would hold the cab in the steam for a second, then place it in the can. When I thought the wax was soft I would take it out and slip a knife next to the cab and free it from the wax. I think it was in my first *Lapidary Journal* that I read about using ice cubes and that is the method I use now. In the winter I use snow but in Denver this source of ice is not to be depended upon. I place 20 or 30 dop sticks in the ice water at once and then start taking them off. It only takes a light pressure to remove the cab as the wax loses its stickiness as it cools. I have found that cabs that have had their bottoms smoothed on the side of the wheel come off easier. Sometimes a light click can be heard about the time the cab is ready to be removed. If a cab does not come off easily set it aside and try again later. Once in a while a cab will not come off with this method and I then take a pair of pincers and break the wax clear. I have a friend who frees all his cabs by placing a knife edge next to the cab while it is laying on a board. Then a light blow on the knife will free the cab from the wax. I think the ice water is the quickest and best way. It has only one objection, it does have a tendency to kill the wax.

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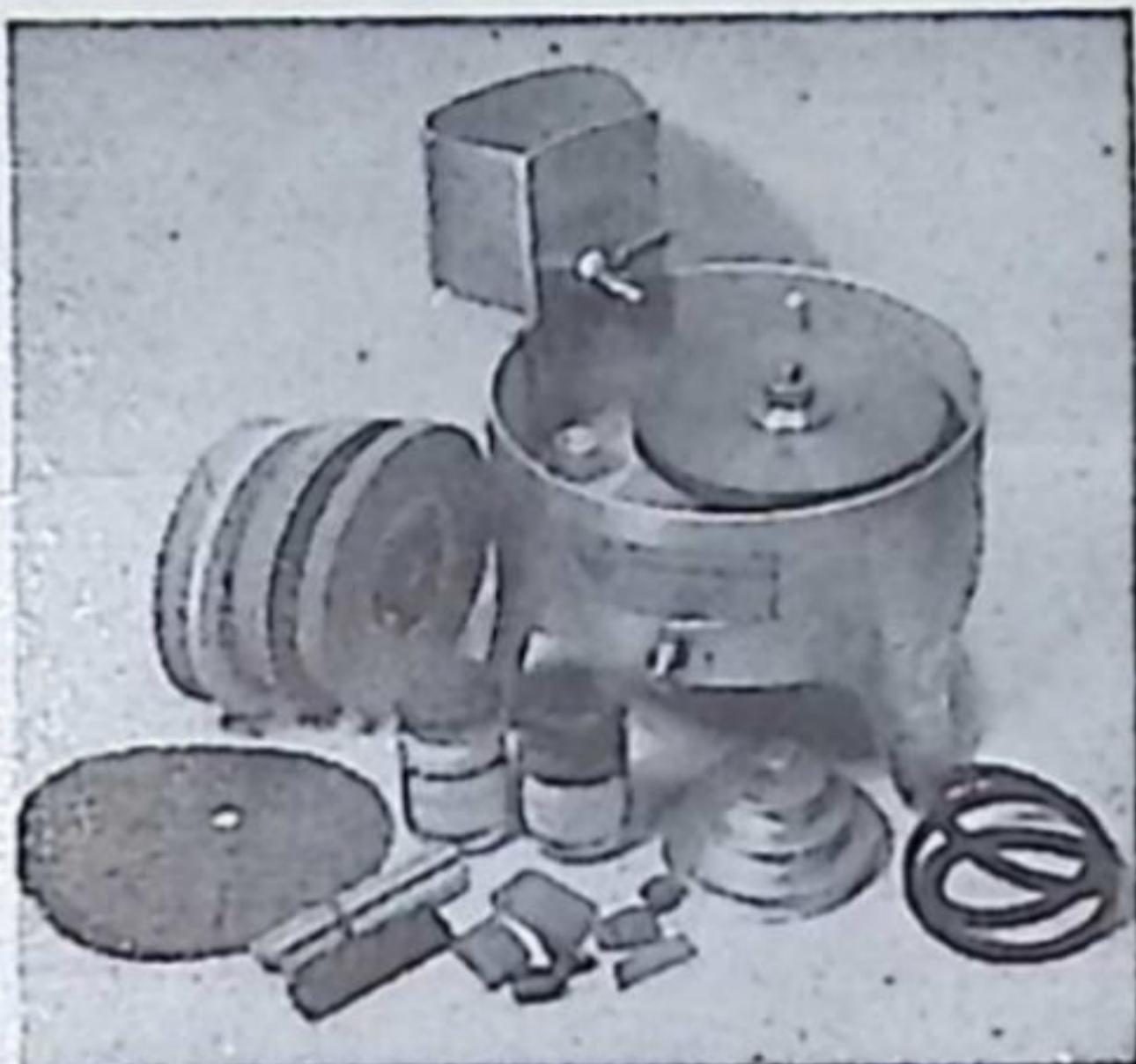
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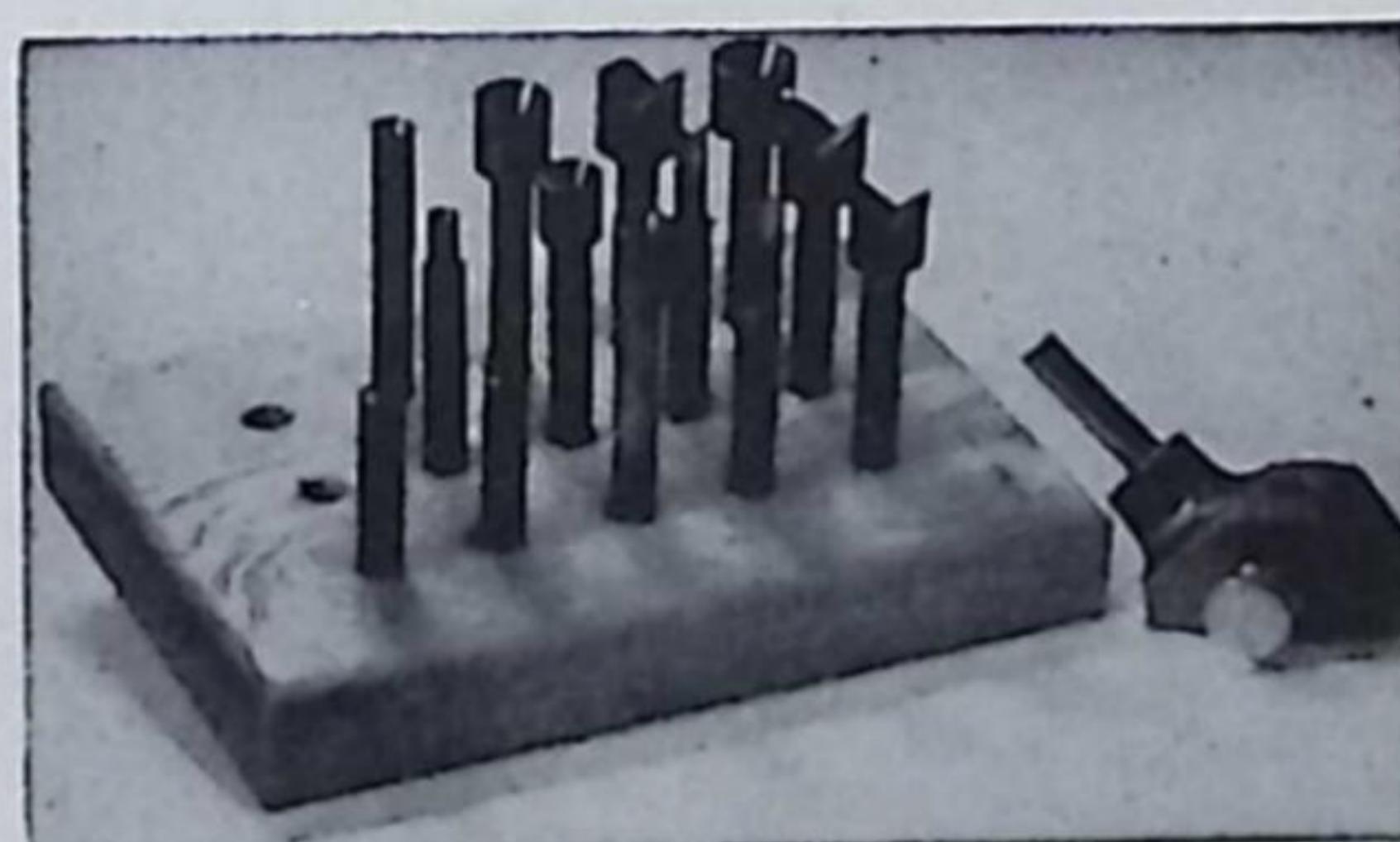
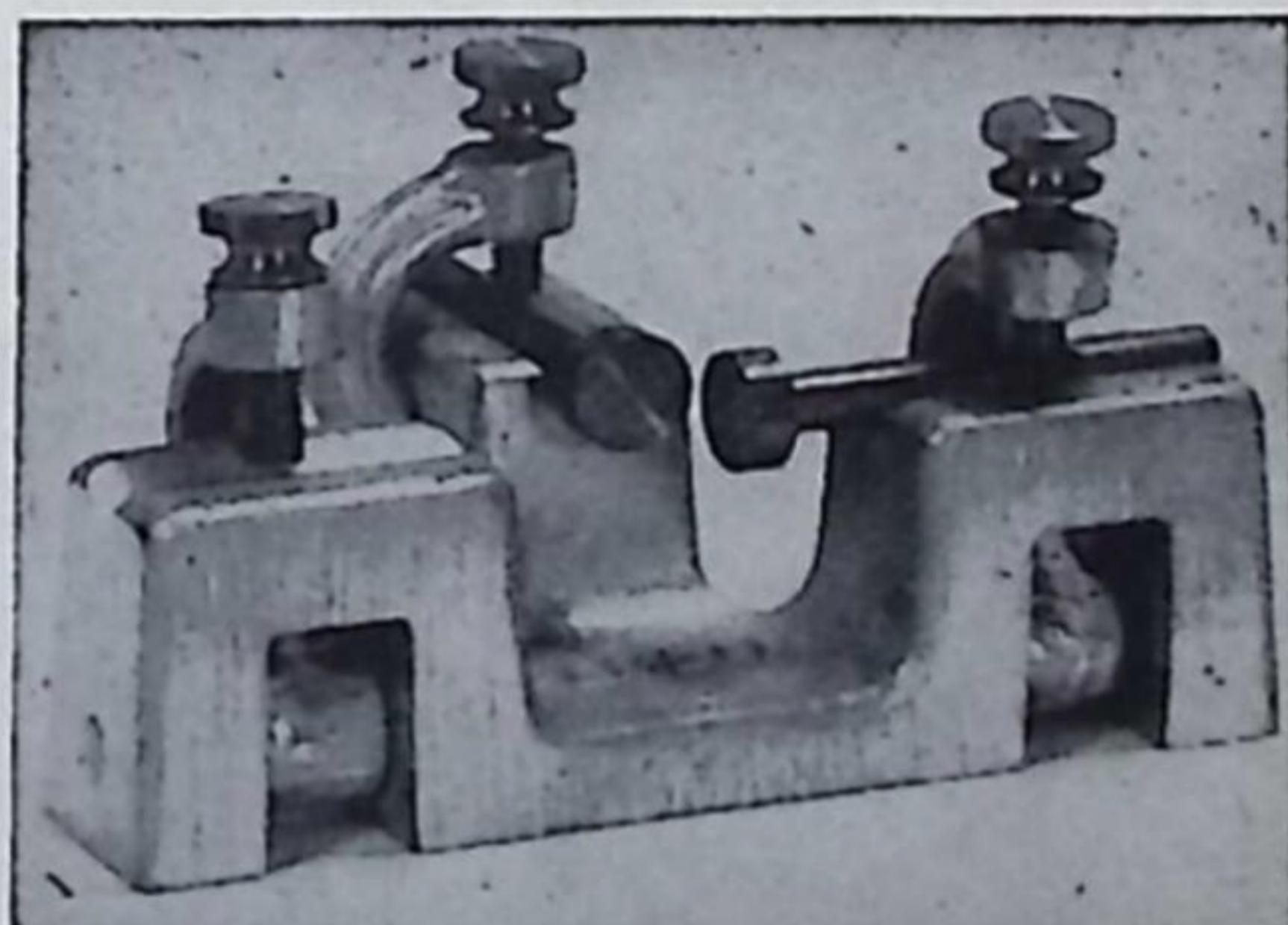


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♦ How To Photograph Gems

By KENNETH R. REEVES

Industrial Photographer

4627 Druid Street, Los Angeles 32, California

In the past few years that I have been rubbing elbows with rockhounds I have noticed one outstanding characteristic. Along with their fascination with nature's stone treasures they are the world's most avid traders. Let them spy a particular choice item in the collection of a friend and they immediately start rounding up some of their own treasures with which to tempt him.

While these may be lesser treasures to the owner, they are frequently items with which he genuinely hates to part. But far fields look greener and you have to give if you want to get. Usually with a sigh of regret he hands over the choice piece to obtain an even choicer one.

But alas, if he could only have some record of his recent possession. And that brings us, logically to the subject of photographing them. This is about as close as you can get to having your cake and trading it too. And who among you hasn't felt the desire for a photo-

graphic record of some particularly wonderful find?

Now, photography, like lapidary workmanship, is a fine art. It takes study, practice, and equipment. So, for the rockhound who wants pictures of his collection, there are several possible solutions.

One solution, of course, is to make his own pictures. This is fraught with danger, for he may end up a photo-fan instead of a rockhound. And that, let me point out, is a fate worse than death!

Another solution is to hire some professional photographer. This is fine if you own a large estate, complete with a swimming pool and three Cadillacs. If you sell the Cadillacs you may even be able to afford to have the pictures made in color. From my observation of the average rockhound, I'd say this is the least likely solution.

The best solution, however, is to strike up a firm friendship with some generous and interested photographer,



Series of pins set with agate by Willy Petersen-Fagerstam.



Series of pins set with agate by Willy Petersen-Fagerstam.

professional or amateur, with sufficient equipment, time and patience, and let the stones fall where they may.

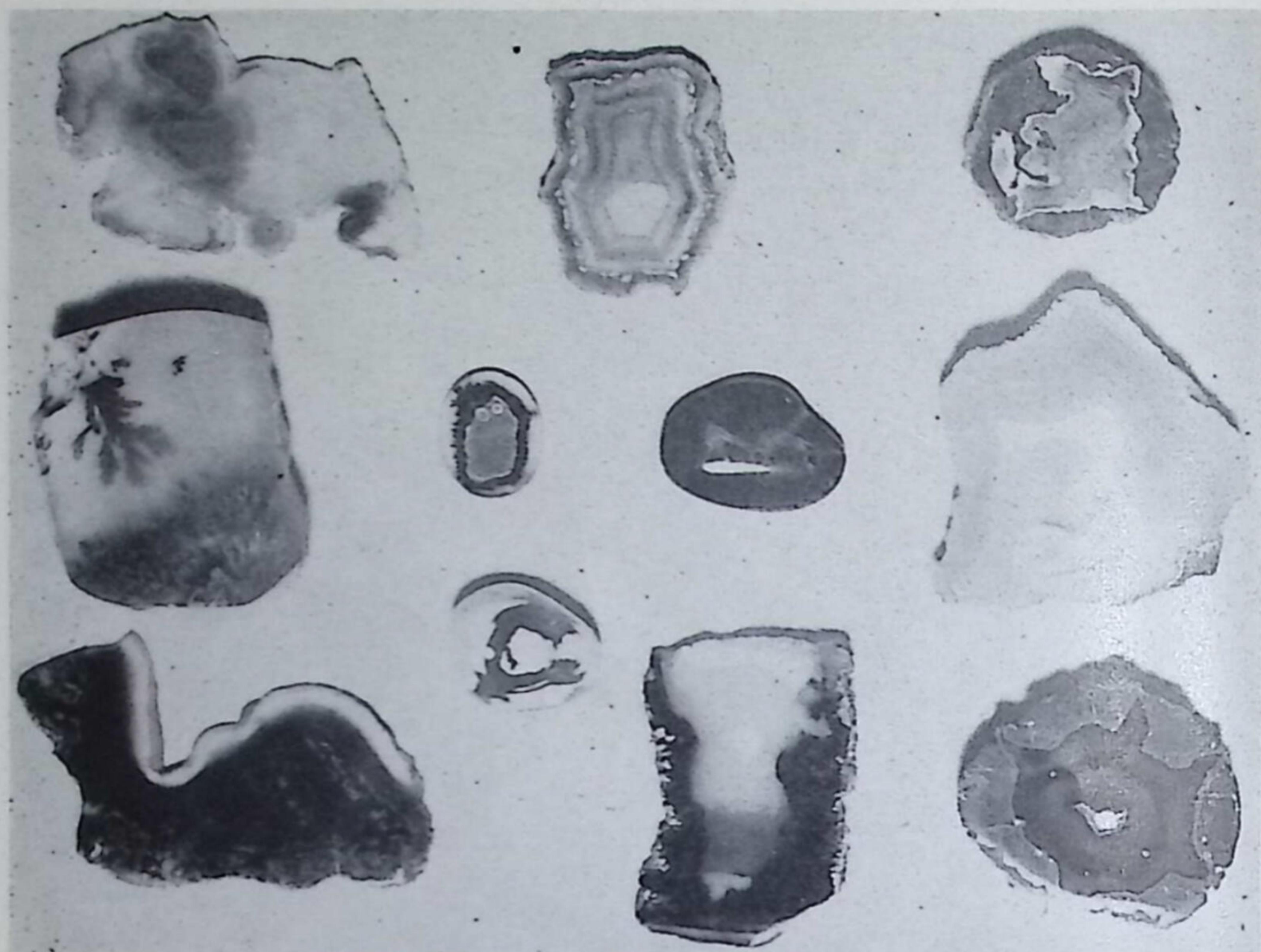
And for these interested photographers, professional or amateur, or those stubborn souls who want to snap their own, let me offer these few words of advice, based on my experience photographing the collections belonging to Walter Kohn and Willy Petersen-Fagerstam. This will apply to black-and-white photography only, of course. After all, let us learn to walk before we try to run!

Photographing polished stones presents certain unique problems. These, as I see them, are: background; lighting; and exposure and development. There is, of course, the highly important matter of the arrangement of the stones in the picture. But I think that is pretty much a matter of personal taste and I see no point in dwelling on it here.

Let us take up the matter of background first. I feel that the background should be inconspicuous, and in contrast to the darkness or lightness of the

stones. Plain backgrounds best fill these requirements. I prefer white cardboard for dark stones, or for dark and light stones together. Black velvet is excellent for light stones, and especially for silver-mounted stones. A flat, non-reflective surface is best; if it is shiny it is liable to reflect one of the lights back into the camera.

Next we come to the problem of lighting; and the problem here is the danger of over-lighting. It has been my experience that the less lights you use the better. I use one light whenever possible, and seldom more than three. The dangers from too many lights are the reflections from the surfaces of the polished stones, and the confusing, conflicting, and unpleasant collection of shadows the stones themselves will cast. Even with one light, reflections are frequently a headache. They can be minimized by moving the light about slowly and watching the reflections on the surfaces of the stones, and occasionally by moving individual stones until the unpleasant reflection disappears. And you



Gemstones from the collection of Walter Kohn of the Glendale Lapidary and Gem Soc. Upper left, Scotty in New Mexico agate. Upper right, old man smoking pipe. Agates are from Redondo Beach and Nipomo, Calif.

can sometimes break up a bad shadow by using a white card, just out of the picture area, to reflect in some light. But watch for its reflection in the stones!

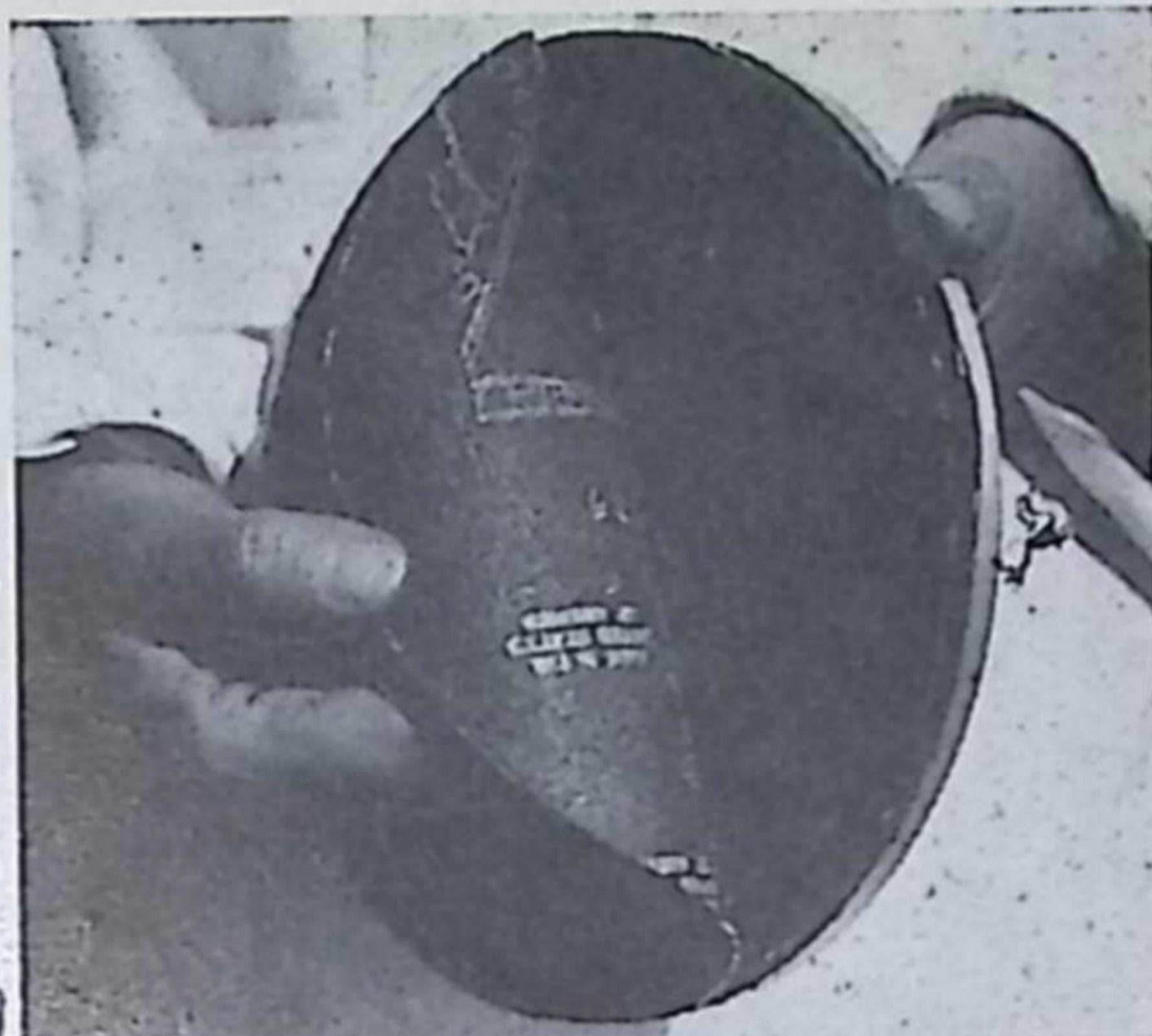
An excellent way to eliminate shadows completely, or to photograph transparent and translucent stones, such as moss agate, banded agate and sagenite, is to place them on a sheet of glass covered with some thin white paper, such as tracing paper, and place a light below the glass. This will best show the patterns and designs of any translucent stones and will wash out the shadows from the top light. Oh, yes, you'll have to use top lights, too! Otherwise you'll end up with a very contrasty silhouette, resembling an X-ray. The light beneath the glass should be far enough from it to evenly illuminate it, and it should be balanced to be of equal intensity with the top lights. A photo-electric exposure meter is useful here.

For those of you who do your own developing and printing, I can recommend my technique of over-exposure and underdevelopment. This, I feel, best preserves the delicate shadings in

most stones. Of course, I develop by inspection, so this is a carefully controlled process for me. If you develop by time and temperature, shoot a couple of extra exposures, varying the exposure times and developing times. Whatever you do, beware of an overdeveloped, contrasty negative. A soft-working developer such as Eastman D-76 or Ansco 17 is highly recommended. And beware the photofinisher with his hot and shopworn soup! If you must take your films out to be finished, take them to a good camera shop and ask for fine-grain developing.

Now for a few words on cameras, and camera angles. I think it best to have the camera directly above the stones, instead of pointing down at them at an oblique angle. In other words, the camera axis should be 90° to the plane of the stones being photographed, instead of 45° or thereabouts.

As for camera equipment, anything that will hold film will photograph stones. But, naturally, some cameras are easier to work with than others. The ideal camera is one that can be focused



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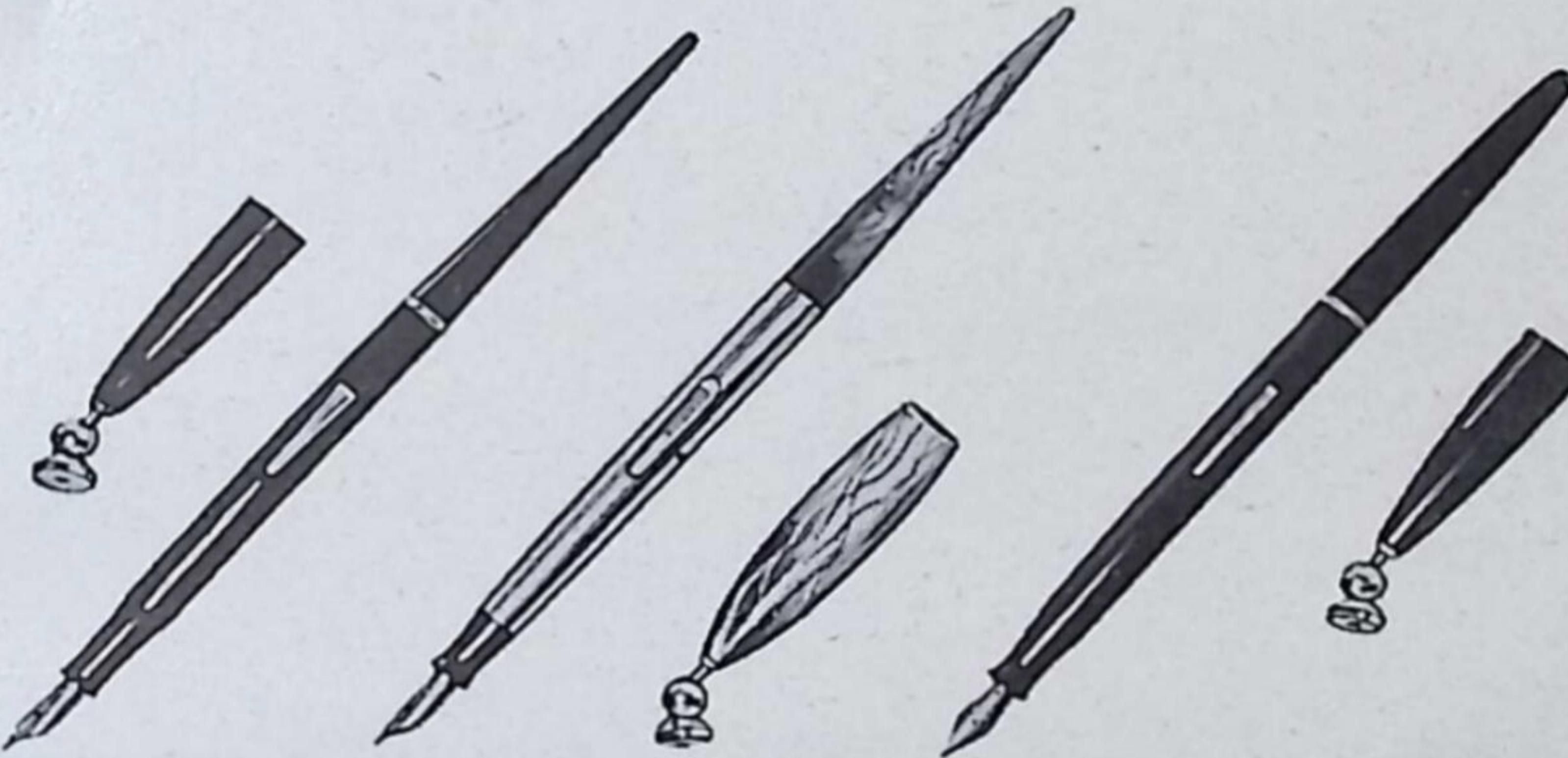
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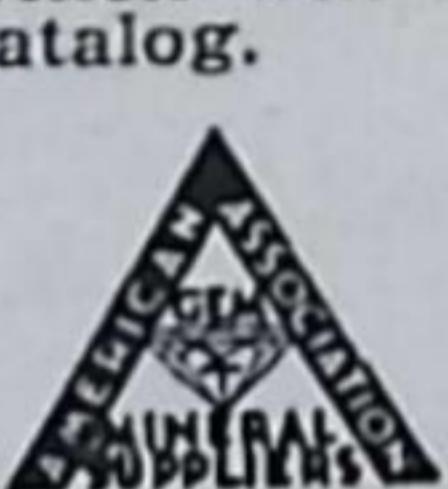
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Additional gemstones from the Walter Kohn collection. The two stones in the upper left corner, the larger one in the center and the large stone in the lower right corner are all from the Horse Canyon, Calif., area. All others are from the bean fields at Nipomo, Calif. All photos used are by the author.

on a ground glass, with the image passing through the lens that will take the picture. A Speed Graphic is an excellent choice. But you can use inexpensive roll film cameras, too, and even a box Brownie will do if you try real hard!

If you use an inexpensive roll film camera, take the back off and place a sheet of waxed paper where the film is exposed, and you'll find that with the shutter open on "Time" you'll be able to observe the objects you are going to photograph. Of course, it goes without saying that whatever camera you use, it should be placed on a sturdy tripod or other firm support. Most exposures are of one second duration or thereabouts.

If your camera will not focus on an object as close as one or two feet from

the lens, you can purchase inexpensive slip-on attachments that will enable it to do so. These supplementary lenses are usually not very sharp but you can overcome some of this by closing your lens diaphragm an extra stop or two. This will correct any inaccuracies in focusing also.

I use nothing but panchromatic film, preferring Eastman Super XX. I suppose you could get away with an orthochromatic film such as Verichrome or Plenichrome, but it would not work too well with red stones.

Well, there they are—all my trade secrets! If you forget to put film in your camera, don't blame me! And, by the way, how would you like to trade a few stones with me? I have some splendid moss agate from Red Rock Canyon!

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No Issue of The Journal Is Ever Old

You may wish to get back copies of the *LAPIDARY JOURNAL*. The very first issue is still available at 50c a copy. Nothing else is available in Volume One but issues No. 2 and 4 at \$1.00 each. Volumes Two, Three, Four and Five are available bound (6 issues each) at \$5.00 each. All issues in Volumes Two, Three, Four and Five are available at 50c each except the Gold Issue (June '49) and August, 1949 which are now \$1.00 each. Embossed Fabrikoid binders now available at \$2.00 per binder for a whole volume.

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By O. C. BARNES

1042 W. Manchester Avenue, Inglewood 1, California
As told to Lelande Quick

Life member of *Los Angeles Lapidary Soc., Inc.*
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Several years ago when the *Los Angeles Lapidary Society* was pioneering the present day gem shows, we used to exhibit our meager yearly output of cabochons at the Los Angeles Swimming Stadium, the Los Angeles County Museum, and the other places where those unforgettable shows were held. When the exhibition plan was prepared by the show chairman, and it was time to pick the location for our display, we always asked one question—"where is O. C. Barnes' spot?" After being shown where it was on the diagram we picked a spot as far away from him as we could get. We did this because we knew too well that that was where the crowd would be; so big a crowd that if our position was next to his table no one would look at our little opals at all.

When the *Los Angeles Lapidary Society* ceased giving their shows during the late fracas, other societies began giving shows and they invited O. C. to bring along his onyx dishes as a special exhibit. Consequently, no matter where you went for several years, there would be Oregon C. and his good wife Zola sitting benignly over their wares, drinking in all the "Ohs" and "Ahs" of the multitude. In addition to many cities in California, we have run into them in San Antonio and other places. They have probably exhibited at more shows and have more ribbons than anyone else in the country. Last year they hauled all their stuff to Oakland and we present, on page 188, a picture of their exhibit. Both the Barnes are getting along now and they have both been seriously ill recently, so that they will hardly be showing their wonderful collection again. Everyone in the Los Angeles area has seen it and they cannot stand the long trips. "Charlie," as everyone calls him, has moved into a

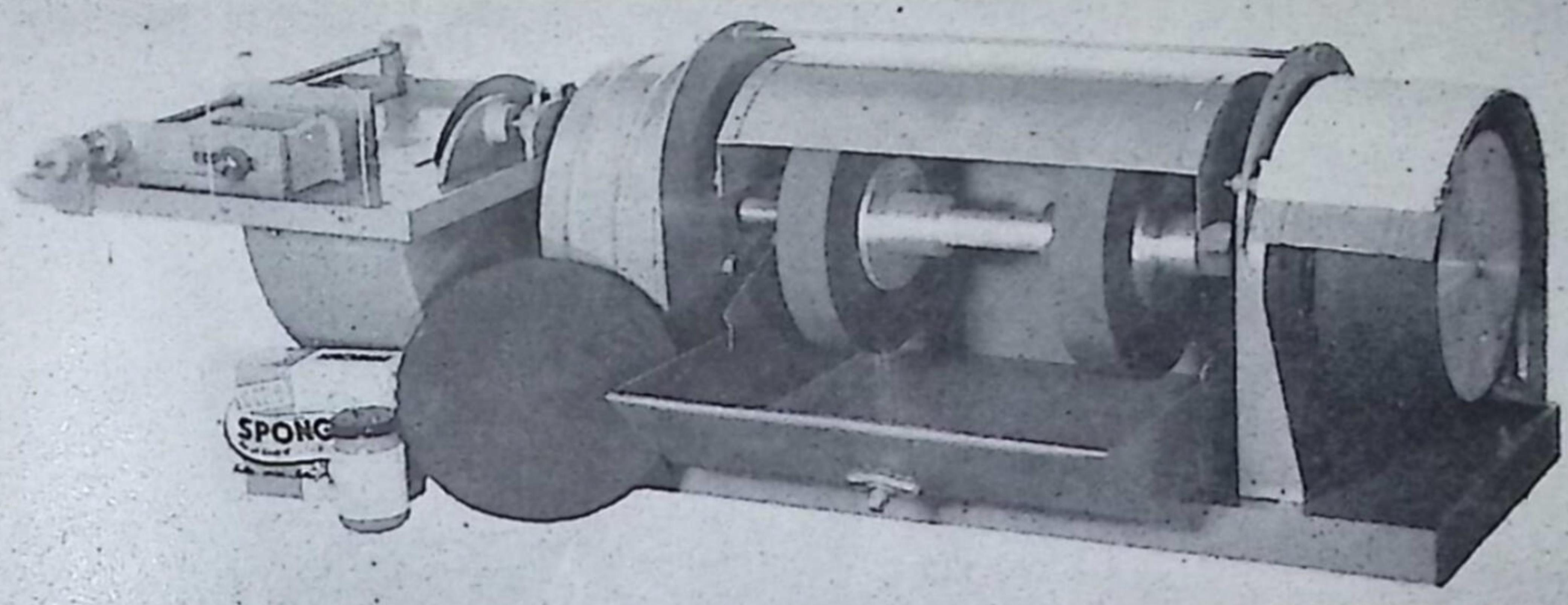
trailer, and the great collection has become a white elephant. He would like to sell it all to one buyer for \$1500. Sounds like a lot but that wouldn't give Charlie a quarter an hour for his work let alone reimburse him for the material and the expense he had in going up to Death Valley to dig it out of the hills.

Mr. Barnes' first exhibit consisted of dinner plates. Then he added cups and saucers and gradually all the accessories of dining—water tumblers, a lazy susan complete with pepper and salt shakers, mustard jar and cruets. Then came bread and butter plates, vegetable dishes, sugar bowl, creamer, vases and fine lamps. Most of these articles are pictured here. The picture does not do justice, of course, to the beautiful rose, chocolate and cream tints of Death Valley onyx.

Several times we have invited Mr. Barnes to tell *Journal* readers how he did the work, and countless others have asked him how he did it, but his stock remark was always, "Oh, you just turn it out. It's easy." We have finally pinned Charlie down to the essentials and we think we have enough information now to enable anyone to do this superb lapidary work. All you need is patience, the onyx and Charlie's skill.

"First of all you cut the onyx to the approximate size of the article you have in mind," he says. Then he continues—"after it is cut you chuck it in a four jaw chuck, using leather strips between the jaws and the stone to keep the material from chipping. Center the rock and clamp it hard enough to keep it from slipping. Free tail stock (live center, ball bearing) is good for this purpose. The speed of the back gear should be only about 75 r.p.m. Have plenty of water running on the work at all times. Use soft tool steel (Rex or

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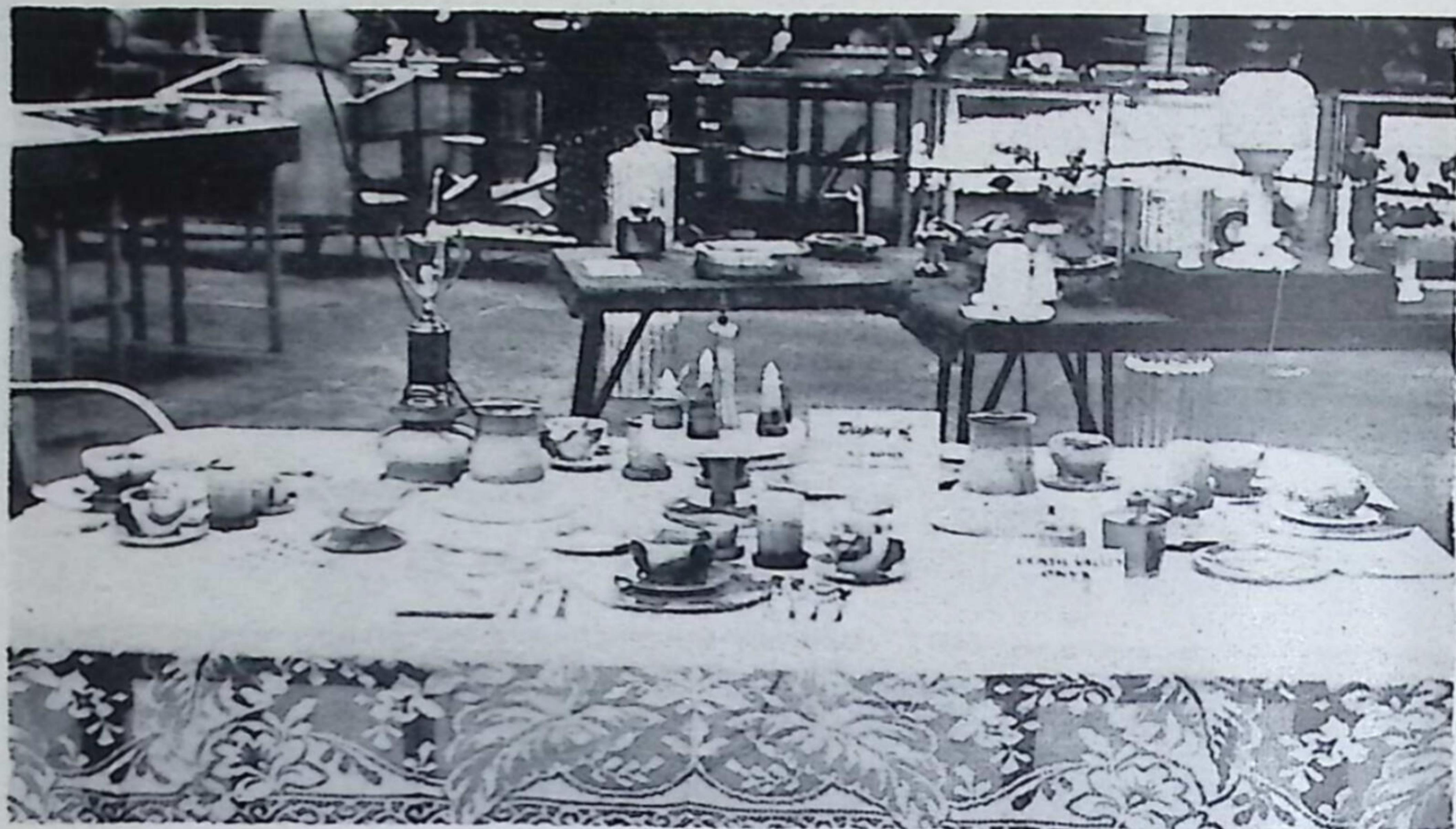
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The O. C. Barnes' onyx dinnerware as seen on display at the 1951 Oakland show.

AAA), about 6 or 8 bits to start with, and keep lots of clearance. You will need right and left and square cut bits and a cut off tool $1 \times \frac{1}{8}$ ".

"Cut the bottom of any piece of work first, leaving a boss or shoulder to hold the piece when it is turned around. Cut each piece to the desired outer shape and smooth it as much as possible. Then turn the job around but do not clamp the jaws too tight.

"When you are ready to drill out the center you drill a $\frac{3}{4}$ " hole in the exact center of the job, cutting from the center to the outside. You may have to use a boring bar. When the piece is about as thin as you wish it (such as a cup or tumbler) the cutting has to be done very slowly and with little pressure.

"After this lathe work is complete the polishing begins. Use a coarse rubbing stone to remove the tool marks. Keep changing to finer stones and always use plenty of water. Wet carborundum paper may also be used. After all the visible scratches have been removed, use some of the finest steel wool and 600 grit carborundum with water for the final rubbing. When the onyx shows a wavy effect it is ready to polish.

"My favorite polisher is a long nap carpet lap, turning at about 600 r.p.m. After the lap is thoroughly wet, pat on a generous amount of English putty powder and work it well down into the lap. Keep the onyx moving on the lap

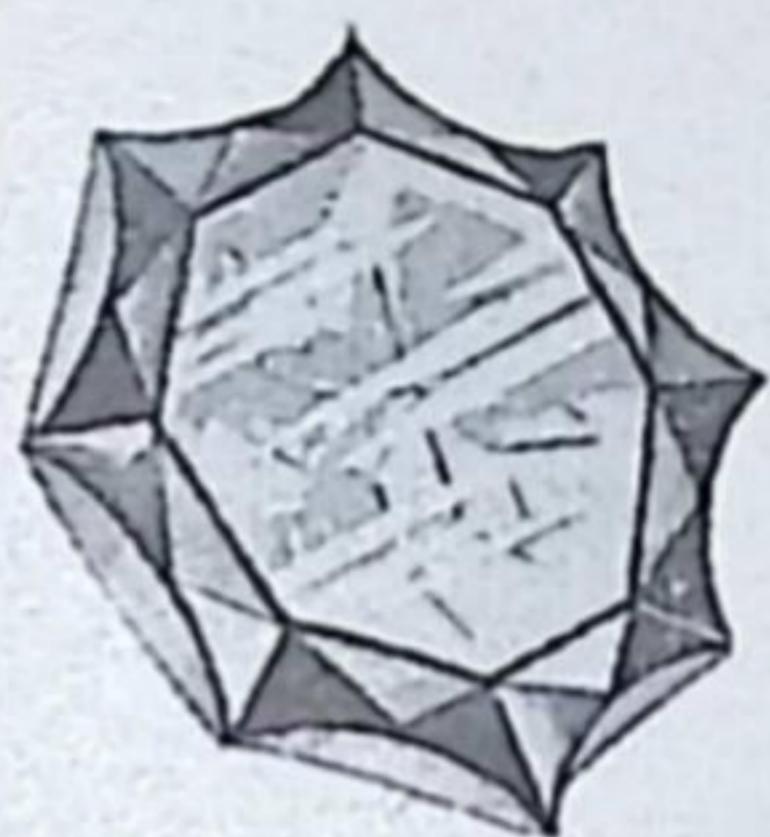
and use a lot of pressure, inspecting the work often. When the polish is high and glossy and free from all scratches, brush into the lap a small amount of oxalic acid solution, made of one part of acid to nine parts of water (about three ounces of crystals to a quart of water). A half tablespoon of crystals with about four tablespoons of water in an old cup, will last a long time. Polish vigorously and wipe the work dry with a soft cloth after wiping off all the acid. Why, there's nothing to it, nothing at all."

For his lap, Mr. Barnes uses two 1×12 " cross grain boards, laminated to prevent warping. The lap is turned to a saucer shape about $1 \frac{1}{2}$ " deep and filled with a strip of canvas, loose in the center and tacked at the edge. Over this goes the carpet, with a long soft wool nap. Carpet swatches can be had from almost any carpet store, where they are thrown in the trash every day. This lap is fine for cabochons too, for great pressure can be used with little danger of burning the stones. Oxalic acid can be purchased in ounce cans from drug stores at high prices or at paint stores or lapidary supply houses by the pound at much lower prices. As oxalic acid oxidizes it should be prepared fresh before using. These same methods can be used for many other soft materials, such as ricolite, travertine, marble etc. The reader is also re-



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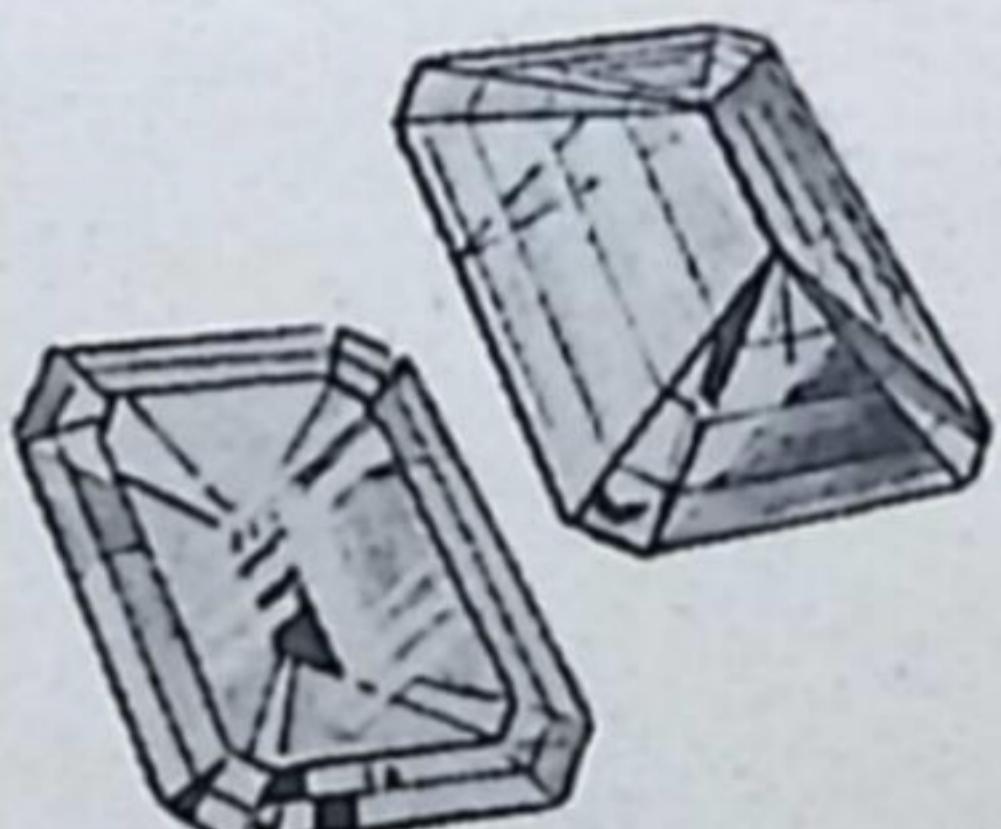
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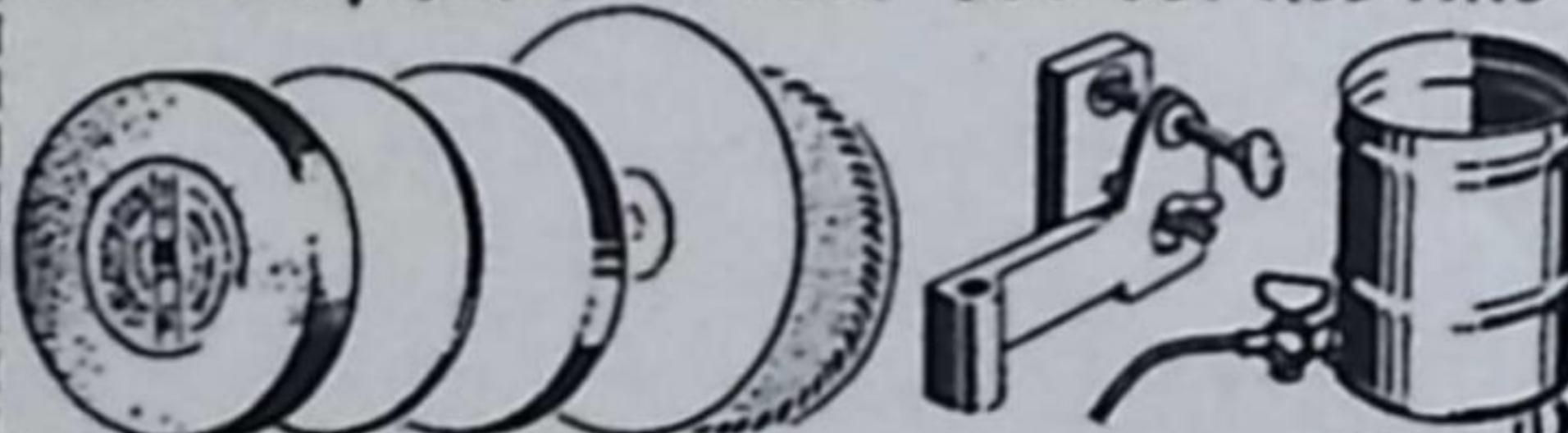
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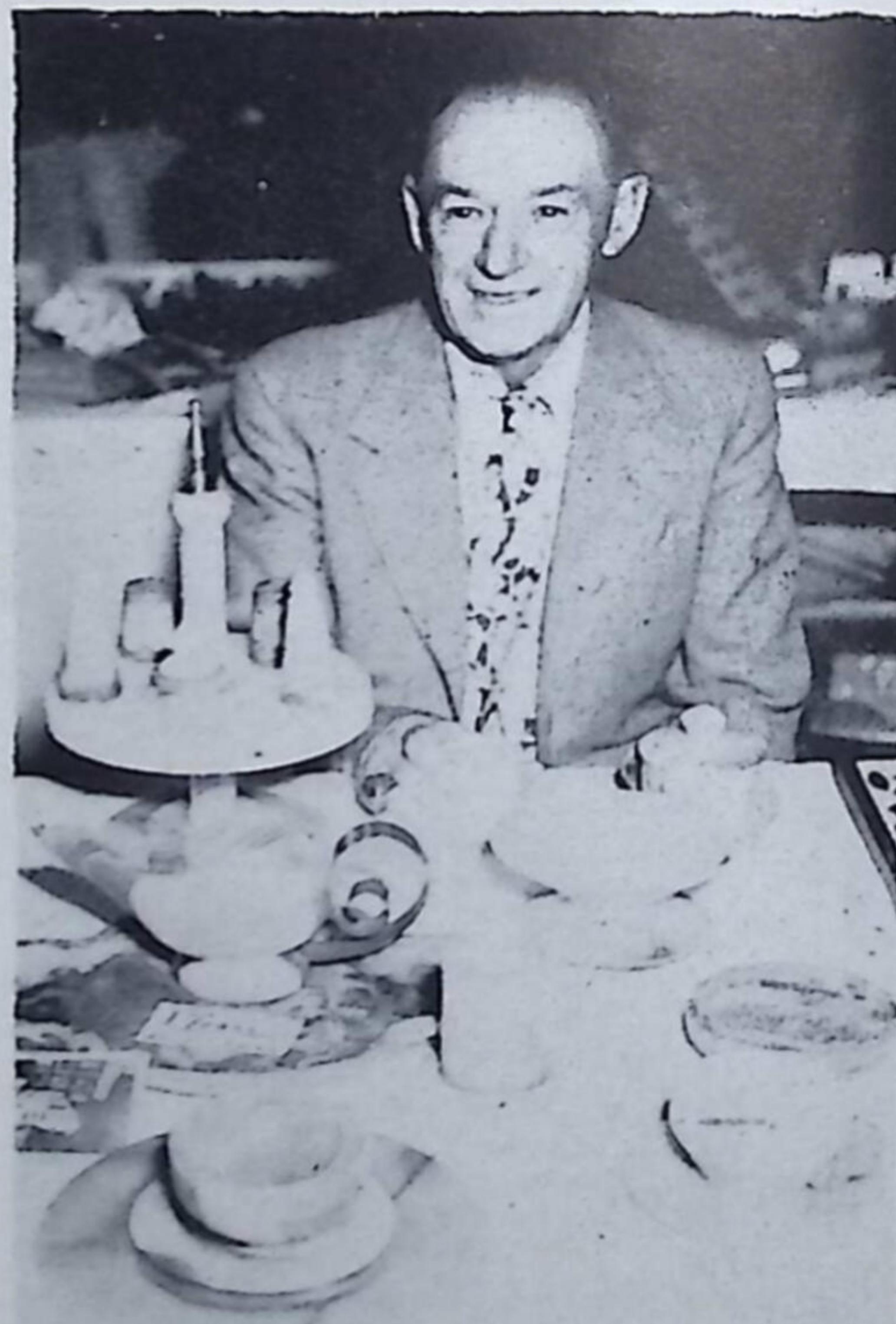


ferred to the article on ricolite in the December 1948 *Journal*. This article gave other methods of polishing which could just as well be applied to travertine and onyx as to the ricolite described. (It is still available at 50c a copy from our office.)

"Charlie doesn't tell many people" writes Zola, his wife, "but his favorite lap is really an old rope lap he made by cementing 3" pieces of heavy rope upright into an old brake drum. That deal does a cleaner job than a cat with a dish of fish, for it gets into every little crevice."

"In this sell-out at \$1500 we have 63 pieces in the dinner set plus 17 odd pieces, such as urns, bookends, slabs for pen mountings, candle holders and seven lamps."

Anyone who has ever seen the Barnes' collection knows that it is a steal at \$1500. Most readers wouldn't take that for their batch of cabochons.



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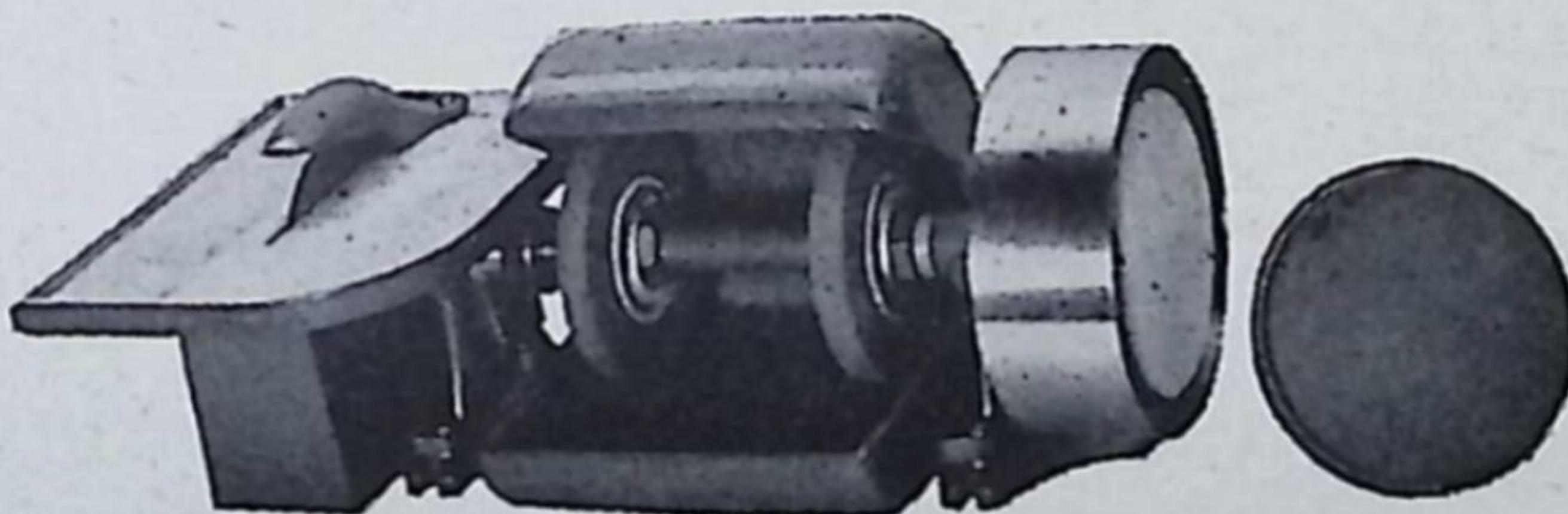
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◆ Diamonds Colored in Atomic Machine

By ED AINSWORTH
Los Angeles

*Crystal Gems Turn Green and Amber After Bombardment by Rays in
University of California Cyclotron*

Nature has been excelled.

The cyclotron has outdone the creative fire of the universe.

Puny man, aided by atomic lightning, has reached into the heart of the rainbow and infused its colors into the hardest and most precious of gems—the diamond itself.

This astounding feat, bordering on the fabled alchemy of the ancients, was disclosed recently.

White and yellow diamonds have been transformed into green, amber and other hues of lasting brilliance.

The accomplishment opens a whole new realm in mankind's immemorial yearning for fine gem stones as ornaments for kingly crown and the white throats of beautiful women.

Announcement of the successful achievement in permanent coloration of diamonds came recently not in terms of poetic ecstasy but in the measured phrases of a scientific paper.

Its authors are Dr. Joseph G. Hamilton and Dr. Thomas M. Putnam of the Crocker Laboratory of the University of California at Berkeley—operator of the 60-inch cyclotron—and Martin L. Ehrmann, mineralogist and diamond expert of Los Angeles.

Ehrmann really is the man behind the story of the planned color-changing of diamonds by means of irradiation with atomic particles.

The findings of the trio have been submitted in an article to the *American Mineralogist*. First public showing of the colored diamonds will take place at a Los Angeles jeweler's soon.

The "bombardment" of the diamonds by the cyclotron and the consequent transformation of color is achieved in the guarded recesses of the cyclotron building amid the awesome heat and blinding flare of 40,000,000 volts and of course is never witnessed by the eye of man. But the results have astounded

even the skeptical physicists of the Crocker Laboratory, who are accustomed to daily miracles. Many scientists considered permanent, artificial coloration of diamonds as scarcely possible.

Yet now the process has been so stabilized that the production of green diamonds under controlled conditions has become commonplace.

Why bother with changing the color of diamonds in the first place?

The answer is in two parts:

1. It should be profitable.

2. New beauty in gems will be created.

Natural green diamonds are one of nature's greatest rarities. They command fabulous prices.

Now, with man producing them at will, it is possible they will become popular at prices considerably less than stones of comparable size in the top white classification.

This is because relatively cheap yellowish diamonds — those containing iron and other impurities which render them less valuable than white gems — can be transformed into beautiful green stones with no impurities showing.

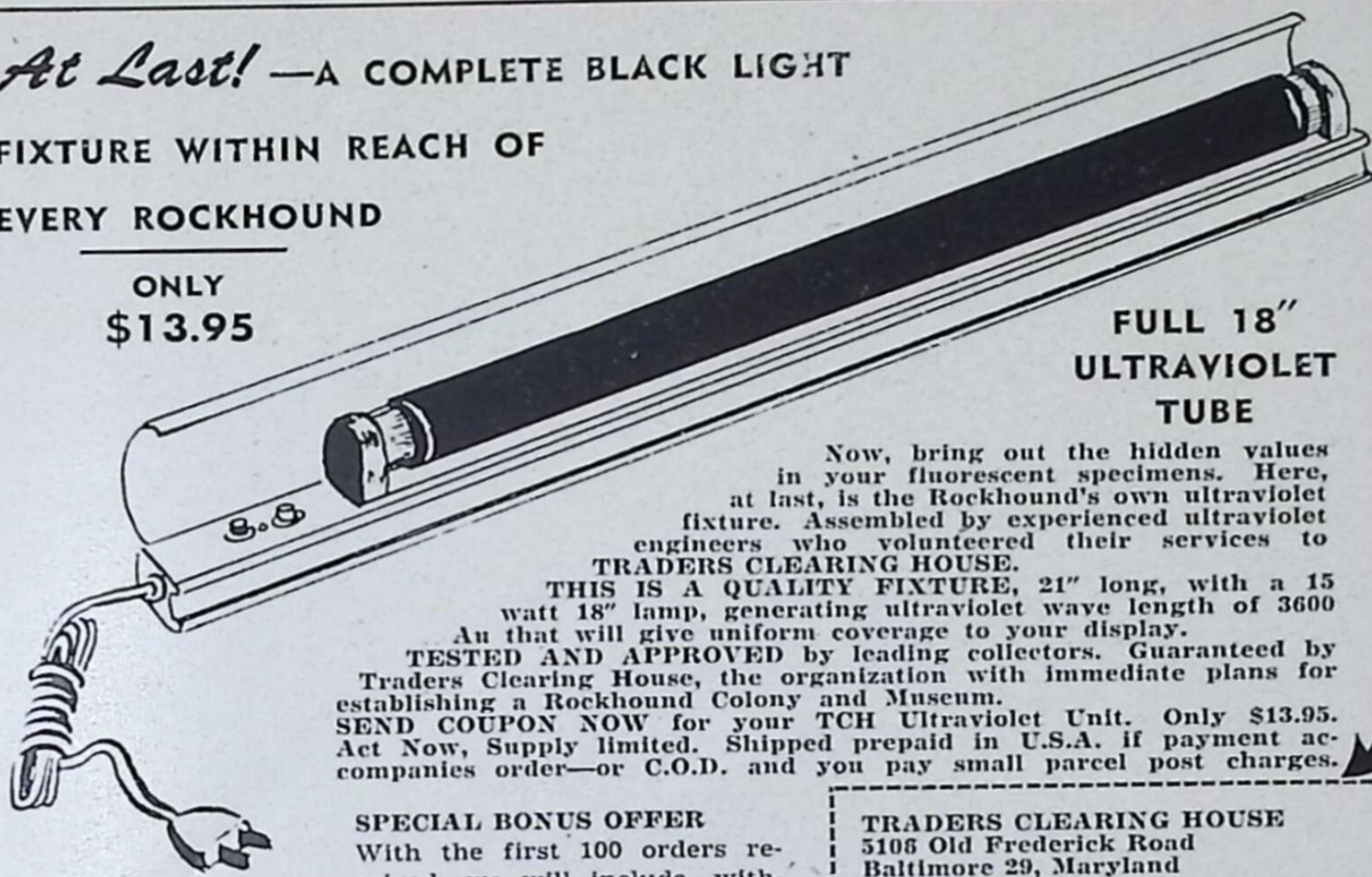
Diamonds have been artificially colored green before this time, but the feat was accomplished by placing the stones in radium salts. This rendered the gems radioactive for a considerable period after the coloring, and consequently somewhat dangerous to the wearer.

No such danger exists with the diamonds treated by the cyclotron.

This is due to the fact that the radioactive elements produced by the cyclotron process have a "half-life" of only 10 minutes—that is, one-half of the harmful radioactivity is lost every 10 minutes, so that complete freedom from these substances is achieved in a few hours at the most.

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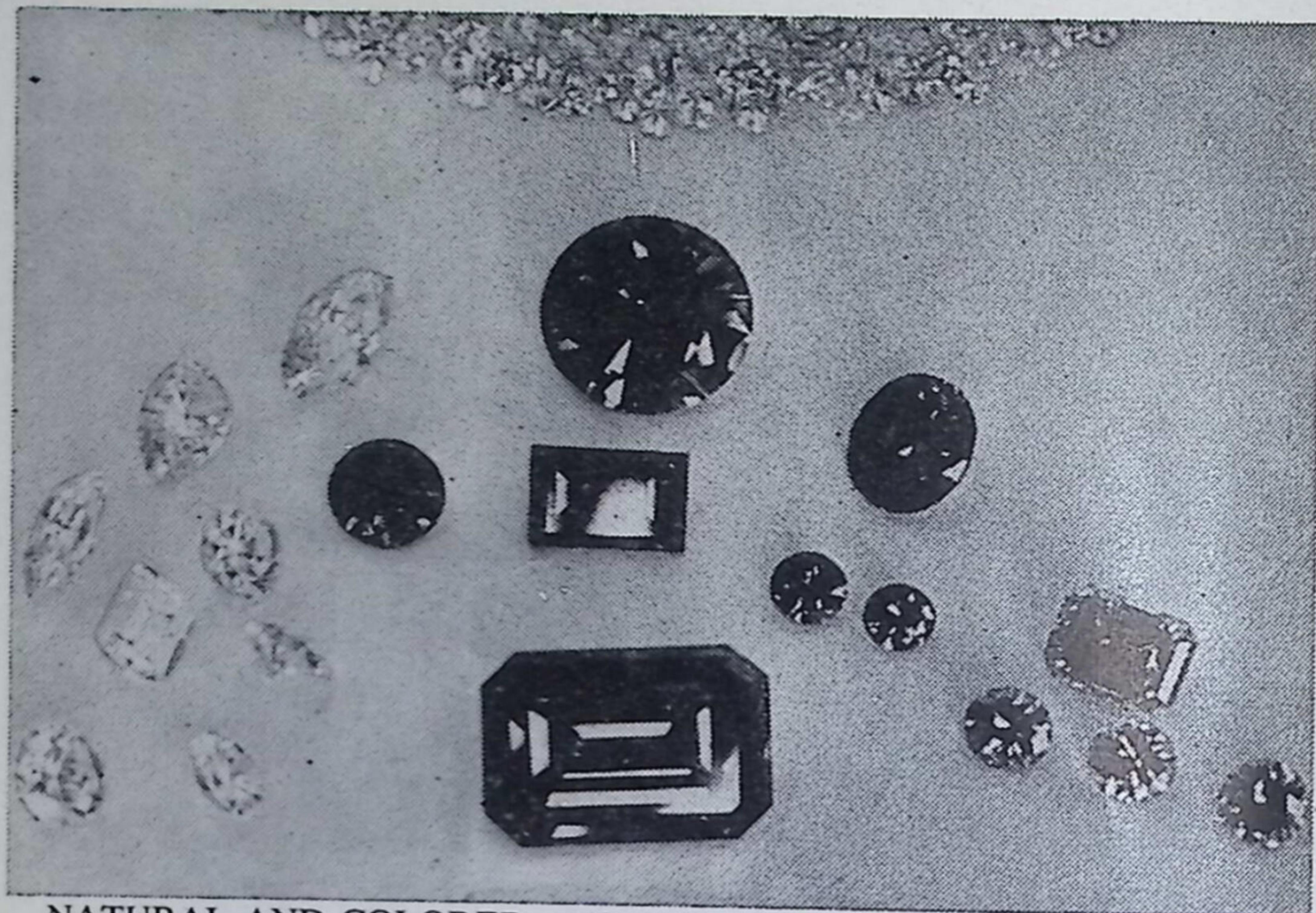
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NATURAL AND COLORED—*Above are natural diamonds with diamonds turned green and amber in the cyclotron. The large square-cut one is amber. The others tourmaline green. The amber stone is 20.21 carats. The large round green gem weighs 11.81 carats.*

Can other colors besides green and amber be produced in the diamonds?

The scientists feel sure they can.

Stability has been achieved with the green by regulation of the charge and length of time of exposure. The same thing, it is felt sure, can be gained with other colors through experimentation.

Indeed, by accident, a magnificent blood-red ruby color was produced in one stone at Harvard—but it faded out to a dirty brown when brought from the cyclotron where it had been exposed for two weeks when it fell into a crack. Normal time of exposure is only a few minutes.

Three different types of "ammunition" have been used with apparently equal success in the cyclotron bombardment—alpha particles, deuterons and fast neutrons.

And what mysterious process causes the change in color?

In the scientific paper prepared by Hamilton, Putnam and Ehrmann, it is set forth that the displacement of electrons within the simple cubic form of the diamond structure permits greater absorption of light-energy from other

electrons which emit it in the color characteristic of the crystal structure. In other words, the "bombardment" sets up innumerable "relay stations" for green, amber or other light according to the characteristics of the stone. The color change thus is ascribed not to any difference in the frequency of light emissions, but rather to an increasing intensity due to the electron displacements.

Apparently, the scientists say, the changes brought about in color are permanent at room temperature. However, the colored diamonds can be brought back to their natural, original color by treating them with heat at 1000 degrees Centigrade for one hour in the absence of air. Sometimes the stone is slightly darker after being "faded out" again. The green coloring, it has been established, goes all the way through the gems.

The economic importance of the discoveries remains to be seen. There always is the matter of prejudice regarding any kind of treated or synthetic gem, although in this instance the relative cheapness of the green stones com-

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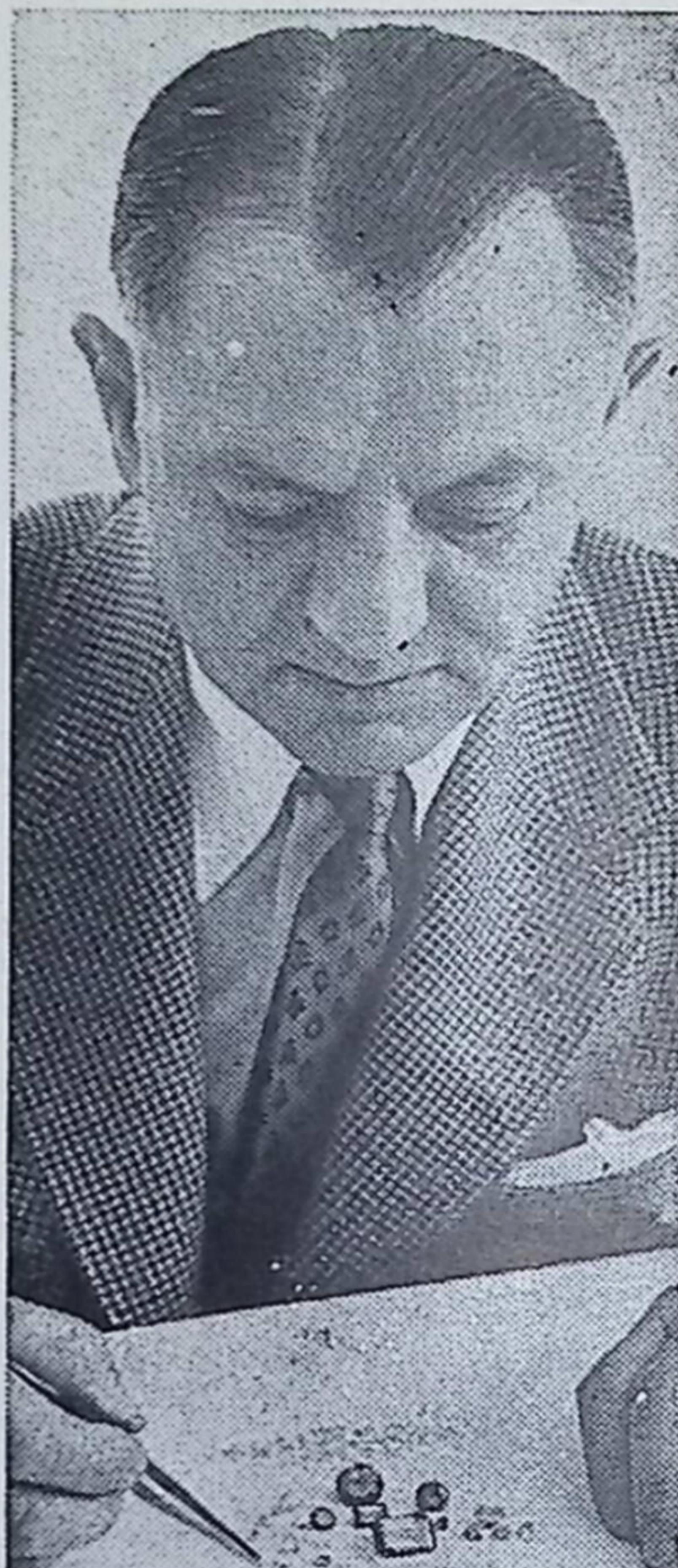
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EXPERT—Martin L. Ehrmann, an authority on diamonds, inspects some of the colored gems.

pared to white ones may prove to be a factor.

Ehrmann's persistence has been one of the great factors in the experiments which finally resulted in the stabilizing of the production of green stones.

He is a lifelong mineral enthusiast, having begun collecting specimens as a boy. Graduated from the University of Hamburg in mineralogy, he entered the mineral and gem field. Later, in New York, he imported many of the famous gems now in the American Museum of Natural History and the Smithsonian Institution. He served in U. S. Army intelligence during World War II and has recently completed a special-duty secret assignment of the same nature.

In 1940, Ehrmann learned of a 14-carat green diamond in New York. It was represented to be a natural one. For eight months the gem was tested to determine whether this was true. The

only thing that was determined was that it was not colored by radium. Barbara Hutton almost bought it for the American Museum of Natural History because of the interest shown in it by Dr. Roy Chapman Andrews. But the lack of positive proof of the authenticity of natural color prevented the deal.

Ehrmann became so interested that he and Dr. Harry Berman of Harvard began experimenting with the diamonds in the Harvard cyclotron.

Later, when Ehrmann came here after the war, he resumed experiments, this time at UC at Berkeley, with the interest of Dr. Ernest O. Lawrence of cyclotron and atom bomb fame.

The green diamonds resulted.

What will the effect be on the world diamond market?

Anybody can make a guess.

(Story and pictures by courtesy of the *Los Angeles Times*.)

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♦ Silver Deer Paper Weights

By WILLIAM T. BAXTER

4615 Chase Avenue, Bethesda, Maryland
Author Jewelry, Gem Cutting and Metalcraft

Most of you have, I am quite sure, at one time or another seen the work of some craftsman and wished that you could make something similar. That was my position when I first viewed the hand-carved silver *Bambi*, made by Edward A. Geisler, of Baltimore. I was more interested than ever after reading his article "Animal Carving in Silver" in the August 1950 issue of the *Lapidary Journal*, on the cover of which *Bambi* appeared.

Not having tried any work of this kind I was somewhat reluctant to make the initial start, and kept putting it off, which was much easier. With the approach of the 1950 Christmas season, and with gifts for some of the neighborhood youngsters in mind, my daughter Laura, ten years old, visited the "five and ten" to make a few purchases. She was fascinated by some of their "best" perfume, for mounted upon the top of each bottle was a plastic deer, Rudolph—with a bright red nose.

Laura purchased several bottles, brought them home and had given away all but two when I had an idea—perhaps I could use one of these plastic deer as a model and make a silver one by means of centrifugal casting. It was Sunday but I thought that "the better the day, the better the deed." I borrowed one of Laura's perfume bottle ornaments and in a few hours had a Rudolph in sterling silver, all polished and ready to mount on a stone base for a paper weight.

I presume that I would also have made a base that night, but I had to wait until the next day as I already had a diamond charged cutter, which I had been using for inlay paper weights, but the cutter unfortunately was in the school shop, where I teach.

Needless to say, before the close of school the following day the paper weight was finished and a number of students were eager to make similar ones for Christmas presents. At the close of school I visited the local "five and ten," fully intending to purchase all of their featured perfume, at twelve

cents per bottle, in order to get the plastic deer to use as models. But the youngsters had also liked Rudolph and the store had sold out. No more were available at this store, or any of the stores in Washington or in Baltimore where Mr. Geisler was searching.

Unfortunately I put the remaining ornament in such a safe place that I could not find it and, having mounted the original casting permanently to a nice onyx base which I didn't care to break, I could not make a mold for duplicating the deer.

In due time, however, I found the plastic deer and made a second casting from which I made a flexible mold from a commercial product called Nuplamold, which is an elastic plastic. This material melts at 325 degrees, Fahrenheit. Using this mold to make wax deer for models used in centrifugal casting, students have made dozens of the paper weights.

To make such a plastic mold, place the metal model inside a smooth metal tube, (I used a 1½" diameter plated wash basin drain pipe); melt the elastic plastic material and pour it around the model, and allow it to cool. Push the mold out of the tubing. Use a razor blade or surgical knife to slit the mold across one end and part way lengthwise to release the metal model. Stand the plastic mold upright, with a rubber band around the slit section to hold it together and melt gold inlay wax (used by dentists) in a spoon and pour into the mold. When the wax cools remove the rubber band, open the mold and carefully remove the wax model. This type of mold requires no lubrication to keep the wax from sticking and if damaged it can be remelted and used again.

Place the wax model inside a metal flask, mix an investment powder with water and pour around the model. Allow this to set and then burn out the wax in an electric furnace or over a bunsen burner. Place the hot flask in a centrifugal casting machine, which is spring powered. Melt silver in the crucible of the machine and release the revolving arm of the machine. The sil-

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Silver deer paperweights mounted on marble bases by the author.

ver is thrown centrifugally through a hole in the end of the crucible, thence down into the hot flask. Remove the silver casting by breaking up the investment.

Solder a small machine screw to the base of the deer, remove all rough spots on the casting and polish. Cratex rubberized abrasive and polishing wheels are excellent. Drill a hole in the stone base and cement the deer in position. The deer shown in the accompanying picture stand $1\frac{1}{4}$ inches high. Bases may be of any desired size and many materials are suitable, such as onyx, marble, serpentine, obsidian, jasper, petrified wood, etc.

Circular bases, $1\frac{3}{8}$ " in diameter, may be made by using inch and a half diameter, thin wall-drain pipe, as used in sinks. This may be used in the drill press after making a suitable header. Cutting may be done with silicon car-

bide. A faster method, if many bases are to be cut, is to make a metal header on a metal cutting lathe, mount the tubing and charge the cutting end with diamond bort.

Small castings, such as the deer, may be made by attaching a small wax rod to the bottom of the wax model and investing the deer in the usual manner. When the investment is dry cut a conical shaped hole in the investment around the wax rod. Burn out the wax in a furnace or over a bunsen burner and then place the hot flask upright. Place silver in the conical hole and melt the silver with a torch. When the silver is molten force it down into the flask by quickly removing the torch and at the same time pushing a tin can partly filled with packed moist paper down over the flask. The moisture in the paper usually forces the molten silver down into the mold.

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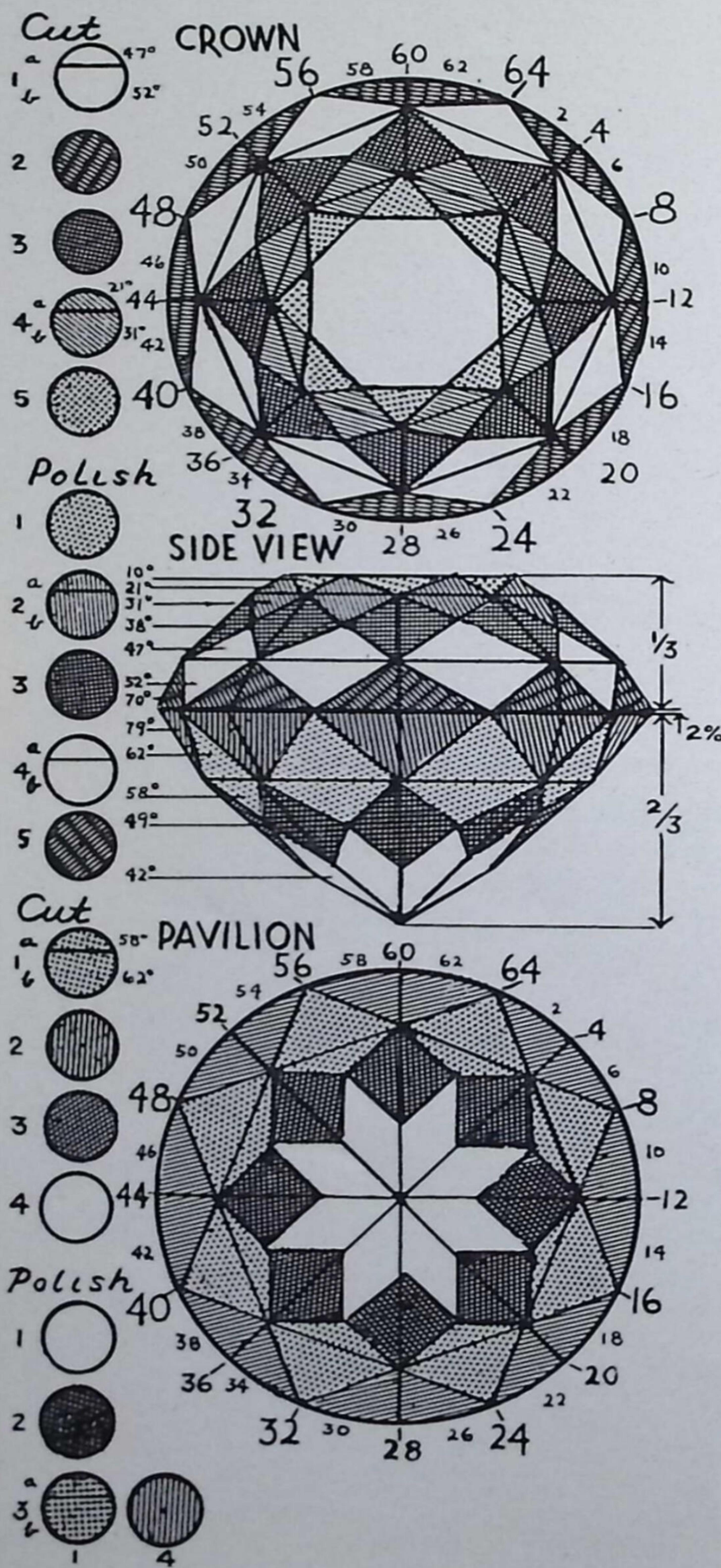


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We herewith present the fourth in the NEW series of facet cuts. The old series was recently completed and the new series prepared by M.D.R. Mfg., Co., Inc. (see ad on inside front cover). The new series is now available in loose leaf book form for \$2.50 postpaid, either from the publisher or our office. The old series is still available at \$2.50 postpaid. In ordering please specify whether you wish Volume 1 or Volume 2.

64 INDEX

ORDER OF CUTTING — Crown

Cut and polish table in 45° angle dop. It may be somewhat less than the usual 40% of the width of stone in this case.

Grind 1st: (B) Eight facets at 52° indexing 64-8-16, etc. (A) Eight facets at 47° same ind.

Grind 2nd: Sixteen facets at 70° indexing 2-6-10, etc.

Grind 3rd: Sixteen facets at 38° indexing 2-6-10, etc.

Grind 4th: (B) Eight facets at 31° indexing 64-8-16, etc. (A) Eight facets at 21° indexing same.

Grind 5th: Eight facets at 10° indexing 4-12-20-28, etc.

ORDER OF POLISHING

See polishing order on left, using same angles and index as were used in cutting.

ORDER OF CUTTING — Pavilion

Grind 1st: (B) Eight facets at 62° indexing 64-8-16, etc. (A) Eight facets at 58° same index.

Grind 2nd: Sixteen facets at 79° indexing 2-6-10, etc.

Grind 3rd: Sixteen facets at 49° indexing 2-6-10, etc.

Grind 4th: Eight facets at 42° indexing 64-8-16, etc.

ORDER OF POLISHING

See polishing order on left, using same angles and index as was used in cutting.

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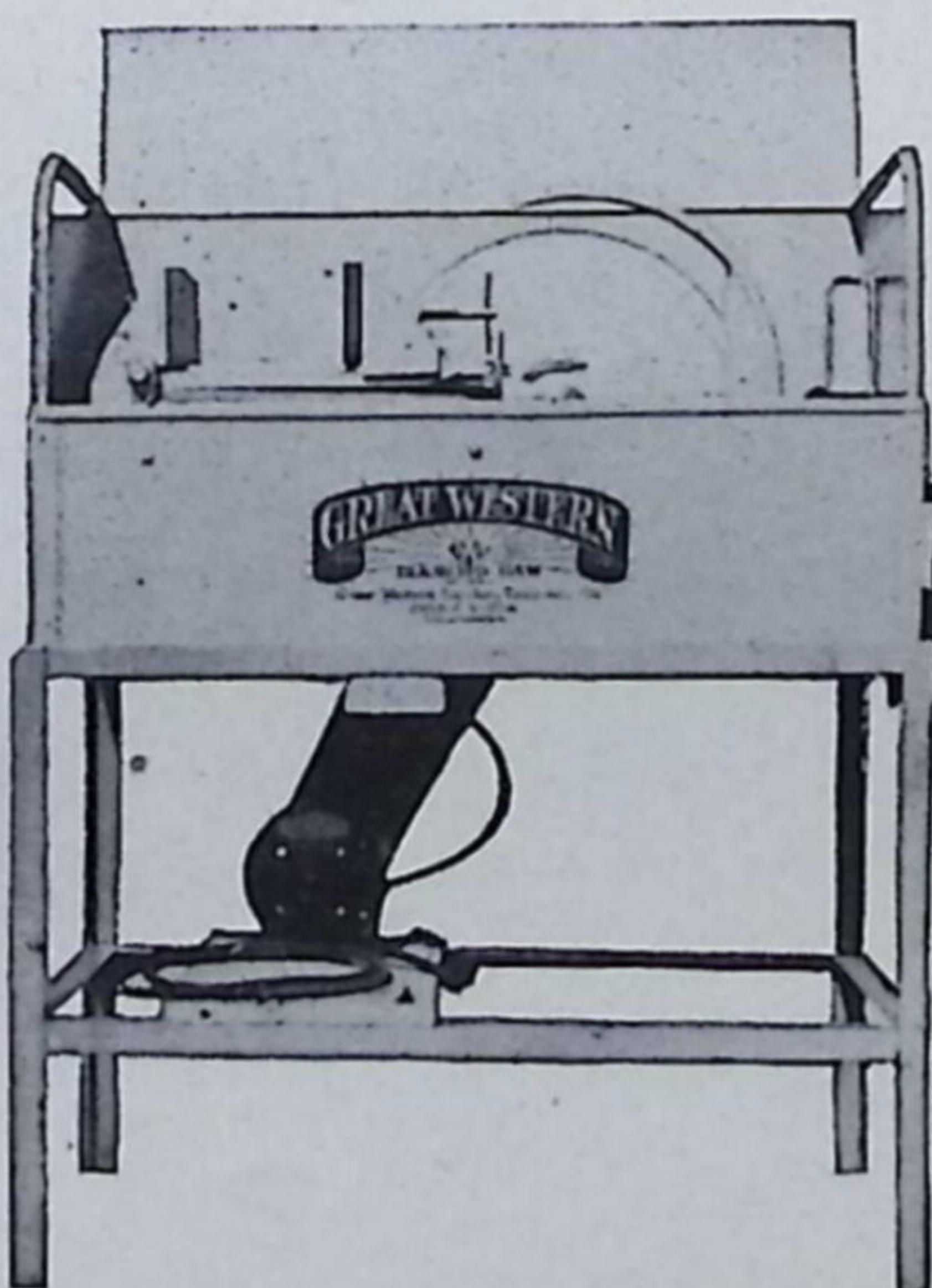
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♦ Shop Helps

If you have found a useful short-cut in your shop send it in. We will give you credit. The most skilled craftsmen, as well as beginners, find this department useful.

The following fine suggestion was passed along by J. F. Craig of Toledo, Ohio.

To finish a gleaming cab is a heart warming delight. To make one to exact size is sometimes exasperating. Time spent in endless grinding, especially of corners, puts callouses on your finger tips and splashes water all over the place.

Here is my method of the speed-up. It is based on two fundamentals:

- a. The diamond saw removes material faster than the grinding wheel.
- b. The saw cuts best at right angles to the surface to be cut.

The Process:

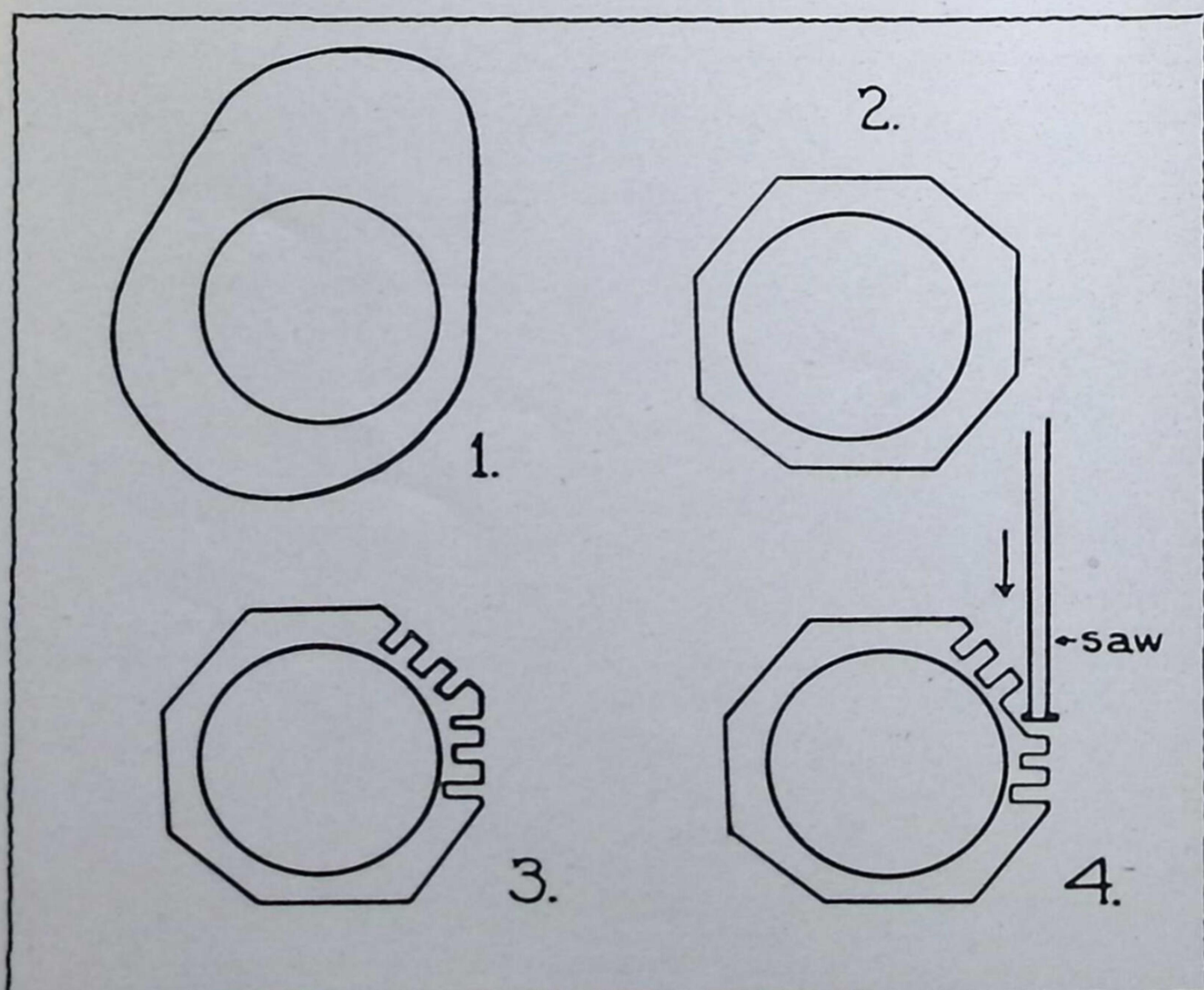
1. Mark the outline of the cab on the slab as usual with aluminum or copper wire.

2. Make several blanking cuts with the saw, as usual.

3. Make saw cuts around the blank perpendicular to the edge. They should be as close together as possible. Cut to within approximately .5 mm. of the marked line, depending upon the thickness of the blank.

4. Cut off the "gear teeth" with the saw, again sawing perpendicular to the surface.

Finish to size on the grinding wheel. Try it. It saves time. Besides that, the curvature of the saw starts the shaping of the cab, in a reverse direction. *Don't saw too close to the line.*



IMPORTED GEM ROUGH AND LAPIDARY SUPPLIES

RUBELLITE: (Red tourmaline from Brazil.) Bright wine-red to brilliant pink crystal fragments for cutting fine cabochons, showing the rich metallic red that only tourmaline possesses. \$6.50 per ounce. Nice size pieces. Will take a gem polish with cerium oxide or Linde "A" Ruby powder on a felt lap.

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GARNET: (From Africa.) Pyrope variety, bright red transparent material for cutting gems of good quality and fine color. From 1 to 3½ gram pieces 60c per gram. Will take a fine polish with cerium oxide or Linde "A" Ruby powder on a tin lap.

AMAZONITE: (Canada.) Bright green opaque, with moonstone adularescence when properly oriented. In ½ to 3 pound pieces. \$1.50 per pound. Will take a fine polish with chromium oxide on a felt lap.

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GOLDEN-YELLOW CITRINE: (Brazil.) Rare Rio Grande material in large pieces for cabochons. The beautiful golden-yellow color resembles almost perfectly precious golden topaz. \$1.25 per ounce. This material will polish well with cerium oxide on a felt lap.

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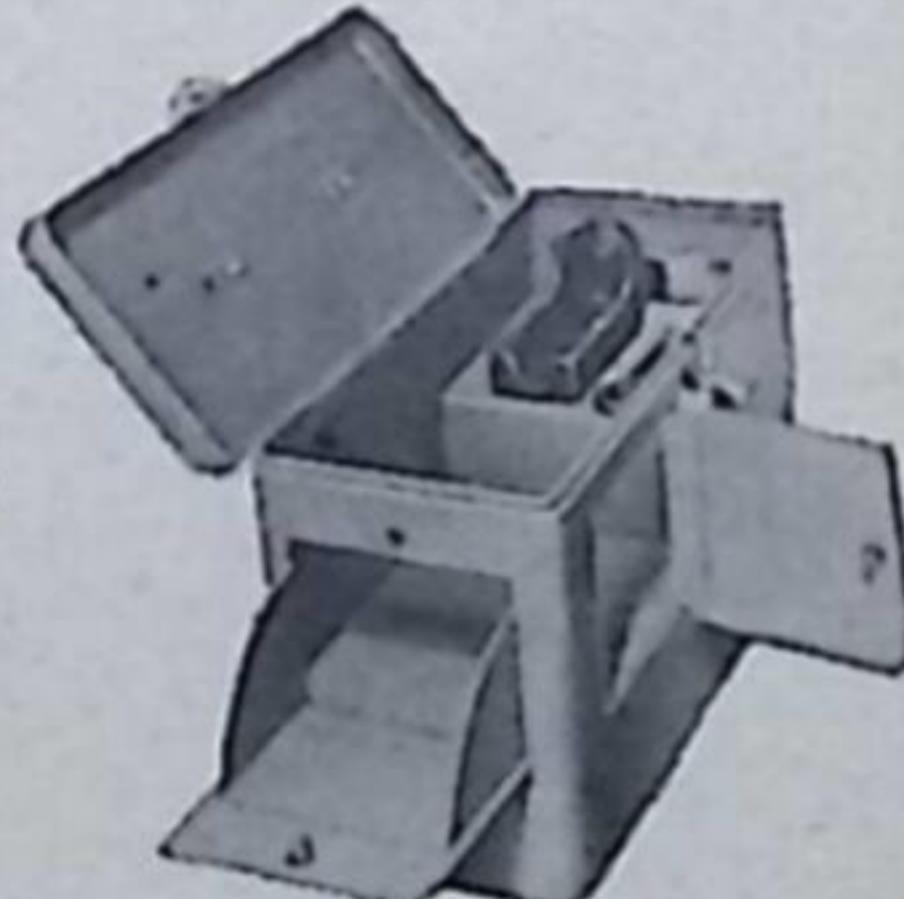
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SL 2537



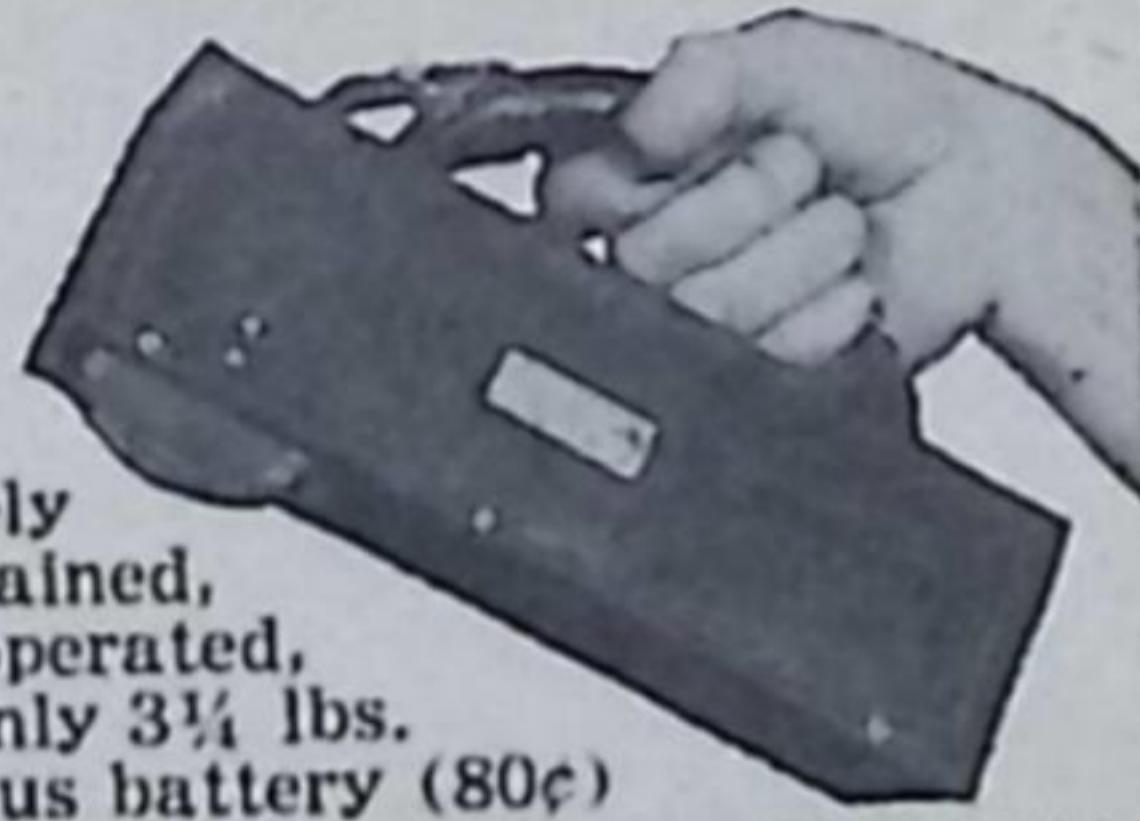
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ULTRA-VIOLET PRODUCTS, Inc.
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About Our Cover

Our cover picture this time is of the *Goddess of Mercy*, a figure carved from red coral and standing 6½" high on its teakwood base. The illustration first appeared in the Spring 1950 issue of *Gems and Gemology* in an article by Lawrence L. Copeland entitled *Coral—The Forgotten Gem*. The figure is in Aletah Quick's personal collection and was acquired several years ago after long search, for there are few coral figures as large as this one and fewer of such quality.

The size of a coral carving is limited by the size of the coral branch, and branches more than six inches long and an inch thick are exceedingly rare. Contrary to popular opinion, turquoise has not always been the favorite gem material of the Hopi and Zuni Indians but coral was their most prized possession after it was introduced to them by the Spaniards in 1540. A favorite of the ancient peoples it has not been popular during the last several generations because of its present scarcity and expense—often selling for as much as \$100 a pound. If any reader is fortunate enough to have any coral figures they should be treasured for they are doubtless worth many, many times their original cost. The color of coral is one of the loveliest of all gems and it defies reproduction. We tried to have a coral cover but this was as close as the printing ink houses could get. Coral isn't red or orange or pink—it is all of them—it is coral.

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IMPORTANT ANNOUNCEMENT

By the Lapidary Journal

With our fast growing subscription list we find that the demands upon our time by our correspondents has grown to be too burdensome. Fully 90 per cent of the letters we receive and feel obliged to answer, are requests for information that has been published by us or for information that is readily available from other established sources.

Clearly, the time has come for the rockhound, and every businessman who has anything to offer the rockhound, to be able to reach for a guide that will answer almost any question that could arise. We have most of the answers in our head and in our files and we are beginning to collect them into a low priced encyclopedia and make it available on or about the first of every year.

In collecting this material we need the cooperation of every dealer in the business, every society secretary, every little roadside rock merchant and agate prospector. We expect to carry a terrific load during these next six months in

The ROCKHOUND

This GUIDE will list every dealer at all—books, equipment, gem materials, rocks, instruments, services, supplies, one will be listed and cross referenced without regard to whether or not any is allotting 120 pages in the book for a basis, for we know that most people ads. **If you do business with rockhounds, send your advertising copy in by October 1.**

The rockhound will be able to pick where any society meets in any town, address of the secretary if he wishes to get in touch with him, amber in the rough, shells for cameo, tool of any kind, any gem in the book that is in print, and many long out of print.

The GUIDE will list every museum in the country and tell you when you can get in to see them.

The GUIDE will tell you exactly how to join any club in your town; it will give a modus operandi for making tables of all kinds—carat equivalents for faceting any gem, brief procedure for cutting any gem, and much other material. It will give gem locations all over the country.

The GUIDE will tell you the names of all the dealers in your town, from Idar-Oberstein who will do almost anything for you to the man who will cut an agate key to fit your front door. The book will tell you what has ever been published on gems and how to get it.

NOW then we need some HELP. Please send us a postal card to the Lapidary Journal, giving the name of your society, the place and time of meeting, the name of the president, the name of the society, whether or not you belong to it, and your address.

If there is a motel in your town and you are a member of a society, please send us a postal card giving the name of the motel and your address.

If you have anything for sale to the rockhound, please send us a postal card giving your name, address and what you sell and we will list it in the GUIDE. Please even if you do not subscribe to the Lapidary Journal, send us a postal card message containing more than your name and address. We reserve the right to reject ads. **Send your ads to the Lapidary Journal.**

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TO THE ROCKHOUND FRATERNITY AND THE ROCKHOUND TRADE

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k, Publisher Palm Desert, California

♦ *Personal Facets*

By LELANDE QUICK

Despite a world wide reputation for being the most aggressive people on the face of the earth, the evidence is preponderant that we are the laziest people also. That is to say that a great percentage of our Yankee ingenuity is spent in finding short cuts to avoid work. If it were not so we would not have developed the automobile to its present high efficiency, the electric dishwasher, vacuum cleaner, spray guns for painting, the sewing machine, the automatic milker, and you can take it from there right down the line to electric razors or brushless shave cream. We just love ease and luxury and mayhap it may be the thing that eventually defeats us as a nation.

When people say that a hobby is necessary to complete living but that two hobbies are better we always agree and say that we have two hobbies—gem cutting and avoiding work. We have been developing the latter hobby since we were eight years old and now we are rather proficient at it. Consequently we are always interested in anything that is developed that takes some of the work out of our other hobby—gem cutting.

Something has now come along that has removed most of the grief from lapidary work. It is the lightning change of sanding cloth and polishing buffs without ever having to unscrew a nut or change a wheel. This is accomplished by the use of a new fastening agent called "peel-em-off cement." To our lazy carcass this is a greater boon than radar or television.

Many a time we have been deterred from doing some gem-cutting when we realized that before we could begin to see that magic shine on the face of the wonderful gem, we would have to take all the tacks out of the sanding cloth and remove it from the disk; get the shears and cut out a new cloth disk from a larger piece of cloth, and waste as much as we eventually used. Then it would be necessary to wet that down and take fifteen minutes to tack it all around before we were ready to go again—providing we didn't have to go through the deal all over again on some other size grit. Then came the spring to hold the cloth on the disk instead of tacks. We never liked this because centrifugal force tossed it off when the sanders were run fast, as they have to be occasionally.

Now comes a flat aluminum light weight disk covered with sponge rubber that need never be taken off the spindle. The rubber surface just gets a coating of peel-em-off cement once in a while. While this is glue and holds things fast it is not that sticky kind of glue that clings like a poor relative. Just take a disk of No. 220 cloth that comes cut to size (no waste) and slap it on the wheel with the flat of your hand, just like you'd slap your mother-in-law, if you dared. Turn on the power and go to work. So you finish sanding the gem. Just pull off the sanding cloth like a piece of sunburned skin and slap on the leather buff and start your polishing. Oh brothers—this is a joy!

Felt flock will stick to the glue so use an old sanding disk and glue a flat piece of felt to that permanently and then slap on the combination. You can use leather directly providing the smooth side is the surface that goes on the cemented wheel. This idea can be applied to almost any existing equipment. To try to get along now without "peel-em-off" is like driving a Model T. Turn to page 183 to see where you get it.

* * *

Griffin Grant Waite of Canada has recently cut the second largest kornerupine to come out of Ceylon. It weighed 13.65 carats in the rough and he cut it into three gems, two of which cut .8 and 1.2 carats. Any reader interested in the other piece for himself? Mr. Waite, a well known investigator and contributor to our pages, suggests that as a regular feature the *Journal* should run a BRAGGING BOX, under which head any reader could tell about any new and unusual stone he has cut. It's a good idea so please come along with your items and give us an interesting and useful account of your bragging rock. This could be a very happy idea and we hope the readers will follow through. (*Continued on page 212.*)

Recommended Gem Materials

CHATOYANT LABRADORITE. Selected pieces from Labrador. Hardness 6. Per lb., \$5.00; $\frac{1}{2}$ lb., \$2.50; $\frac{1}{4}$ lb., \$1.50 (tax)

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See Complete Program on Page 213

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This brings us to another idea we have had in mind for a long time that came to us through Hugh Leiper of Austin, Texas. Mr. Waite supports the idea and he has also been in correspondence about it with Leiper. Hugh and I have discussed the idea at length.

There are a number of earnest investigators and experimenters abroad in the land who are always trying new cuts and unusual materials. For instance we believe Mr. Waite himself was the first amateur to ever facet titania (see his account of it in the June 1948 *Journal*) and see his account of methods in cutting soft materials in the October 1947 *Journal*. That article was one of the reasons for the prompt sellout of that issue and we have a standing offer of \$1.00 a copy for it. We have never republished any old articles in the *Journal* but we are considering republishing "Faceting of Soft Transparent Gems."

To get back to the idea—how many readers would like to join an international amateur faceting group, the purpose of which would be to exchange information on how to facet difficult materials, where to get them, new cuts, best cuts for each material, determined after due research etc., etc.? The information developed by this group would be available to readers through the pages of the *Journal* and the group would have an exhibition of its members' work tied in with some regional show once a year, spreading the exhibition around so that every section of the nation would get a chance every five years or so to see something unusual.

There are some people who would join anything so it might be wise to place a restriction on membership and make each member submit at least two examples of his faceting work to a jury once a year. From all these examples the jury would pick and judge the gems to be exhibited nationally. No dues—no meetings—just work and fun and real research, with a grand object in view perhaps of a group collection of one cut gem of every mineral that can possibly be faceted to be donated to the National Museum. What a display that would make—everything from coal to diamond or the grand carbon circle. If you are interested in this please send me your name and address and we will get the deal organized.

* * * * *

As soon as we O.K. the page proofs on the October issue, God willing, we shall step in our car and set out for our old home in the east to see Pennsylvania and New Jersey again during the most glorious month of all—in October's bright blue weather. Our advertisers are respectfully requested to get their advertising copy in on time so that we are not delayed in our plans. No advertising will be accepted that is received after September 10 and no proof will be supplied if it is received that late. Since these ads are usually the ones aimed at the Christmas craft making for gift giving market our October issue is always one of our biggest and one of the most important.

On Thursday October 9 we shall give our lecture on *The Second Stone Age*. Enlarged and revised this is substantially the same talk we gave in New York three years ago but we hope all who heard it then will come to hear it again and that our many subscribers in the east who are planning to attend the Eastern Federation of Mineralogical and Lapidary Societies meeting will try to come on that day particularly. The *Journal* has over 400 subscribers in northern New Jersey and metropolitan New York and we hope to meet most of them at the Newark convention and show. See the complete program on the opposite page. Quite a few of us from the west are coming 3000 miles to Newark so that certainly everyone in the nearby New York area should get to see this show and witness what others are doing in our hobby. The highlight for us will be the visit on Sunday, October 12 to the famous Franklin, N. J. mineral location, said to have a greater variety of minerals than any other one spot in the whole world, a great many of them fluorescent. The mine owners are going to bulldoze the dumps all day so that maximum collecting can be accomplished. Mr. Albert S. White, convention chairman, has graciously given booth space to the *Journal* so that we can meet our many eastern friends. Please come to see and hear us. We will show you some of Willy Petersen-Fagerstam's jewelry illustrated on pages 180-181—and our half pound opal.

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OFFICIAL PROGRAM

EASTERN FEDERATION OF MINERALOGICAL AND LAPIDARY SOCIETIES

SECOND ANNUAL CONVENTION GEM AND MINERAL SHOW

OCTOBER 9, 10, 11, 1952

ESSEX HOUSE HOTEL
NEWARK, NEW JERSEY

THURSDAY, OCTOBER 9, 1952

12 Noon—Convention Opens in the combined Oxford, Cambridge and Windsor Rooms, Essex House Hotel.
12 M.-11 P.M.—Registration
12 M.-11 P.M.—Viewing of Commercial and Non-commercial Exhibits.
3 P.M.-4 P.M. — Lecture, "The Second Stone Age." Mr. Lelande Quick, Editor and publisher of Lapidary Journal.
8 P.M.-10 P.M.—Lecture, "Ye Compleat Mineral Cabinet." Dr. Frederick H. Pough, Consulting Mineralogist.
11 P.M. Doors close.

FRIDAY, OCTOBER 10, 1952

9 A.M.-11 P.M.—Registration
9 A.M.-11 P.M.—Viewing of Commercial and Non-commercial Exhibits.
9 A.M.-12 M.—Judging of Club and Individual Member Exhibits in the Oxford and Cambridge Rooms.
12 M.—1:30 P.M.—Fellowship Luncheon.
2 P.M.-3 P.M.—Lecture, "Crystal Structure and Its Effects Upon the Process of Gem-cutting." Commander John Sankankas, author of "The Amateur Lapidary," a feature of Rocks and Minerals magazine.
4 P.M.-5 P.M.—Auction Sale in the Cambridge Room.
8 P.M.-9:30 P.M.—Lecture and motion pictures, "Chubb Crater." Dr. Victor B. Meen, Director, Royal Ontario Museum of Geology and Mineralogy.
11 P.M.—Doors close.

SATURDAY, OCTOBER 11, 1952

9 A.M.-11 P.M.—Registration
9 A.M.-11 P.M.—Viewing of Commercial and Non-commercial Exhibits.
11 A.M.-12 M.—Auction Sale in the Cambridge Room.
2 P.M.-4 P.M. — Annual Meeting and Election of Officers. (Club Delegates Only)
7 P.M.-10 P.M.—Banquet and Installation of Officers in the Starlight Room.
11 P.M.—Convention and Show closed.

SUNDAY, OCTOBER 12, 1952

Gala Field Trip to the Buckwheat Dump at world famous Franklin, New Jersey. Permission has been granted by the New Jersey Zinc Company for the Eastern Federation to employ a power shovel to turn and spread the huge dumps all day.

The trip will be under the direction of Mr. Gene Vitali, Chairman of the Field Trip Committee.

Admission on the Dumps will be by Registration Badge only.

Convention Chairman
ALBERT S. WHITE

• So You Want to Cut Opal!

By CARL S. WILLIAMS
Tilicum Lodge, Medford Lakes, New Jersey

What rockhound has not at some time or other seen a beautiful opal and wished that he might produce a similar gem from a piece of unpromising rough? It is a great thrill to see a rainbow develop in a piece of rough as it is ground on the wheel. No one could resist its fascination after he has once experienced it.

To some this has become a business but to most of us it remains a hobby. Unless the cutter expects to invest a considerable sum, and be prepared to take many disappointments, he should let it remain a hobby. As such he may buy an occasional piece of rough and make a gem from it and thereby exact considerable satisfaction in the possession of another pretty specimen for his collection. If, on the otherhand, he wishes to cut for profit, a thorough investigation of the chances of success should be made before he has squandered too much of his hard earned cash. To such the writer wishes to give the benefit of his first hand experience.

First of all to get a better idea of what we are working with let us consider just what an opal is. Opal is strictly an amorphous material; that is it is never found in a crystallized state. Its formula is $\text{SiO}_2 \cdot \text{nH}_2\text{O}$. This merely says that it is a hydrated silica with varying amounts of moisture varying from two to thirteen per cent. It is extremely brittle and decrepitates or flies apart upon heating to a certain temperature. This temperature will vary considerably, depending upon the characteristics of the particular sample being heated. Rapid and uneven heating are particularly destructive to gem opal. It is possible to heat some specimens as high as 350° without any ill effects while other samples will fly to pieces at much lower temperatures.

The hardness varies from 5.5 to 6.5 and the specific gravity from 1.9 to 2.3 depending largely upon the moisture content. It is chemically very inert and is not affected by strong acids, including sulphuric acid. Although it contains considerable moisture it is impossible to

dehydrate it without destroying it as a gem. When heated with fuming sulphuric acid at 300° for a week the surface only is affected, becoming chalky and crackled. Caustic soda will attack it, gradually dissolving it at high temperatures. Hydrofluoric acid attacks it readily, completely decomposing it with the formation of silicon tetra-fluoride and water.

By far the largest amount of opal found in nature is merely chalky rocks such as geyserite, floatstone, hyalite, menelite, infusorial earth etc. The gem variety is indeed very rare. For further description of types see Murphy's book *They Struck Opal*. (\$4.00 from *Lapidary Journal*.)

The first question to occur to the amateur is—where may rough opal be purchased? There are many such places both here and abroad. Buying from domestic sources has a certain advantage in that material that does not meet the purchaser's requirements may be returned, the purchaser bearing only the shipping charges. Most of the domestic suppliers are located either in California or New York City. Instead of buying from domestic sources it is possible to purchase direct from the dealers in foreign countries and in particular in Australia. When buying from a foreign source it is almost impossible to return unsuitable material for a refund and it is necessary to accept that which is sent.

Many dealers will parcel their material, making a special price for the lot. When this is done it may be necessary to accept a lot of poor material to get a small amount of good quality rough. Of course the very best way to buy opal, aside from visiting the mines in Australia, is to go to the domestic supplier and pick out satisfactory material from his stock on hand.

Whenever one buys opal he must remember that it has passed through many hands from the mines to the cutter and at each change of ownership some of the best material has been removed. This probably accounts for the difficulty in getting good material from domestic sources. However, some good

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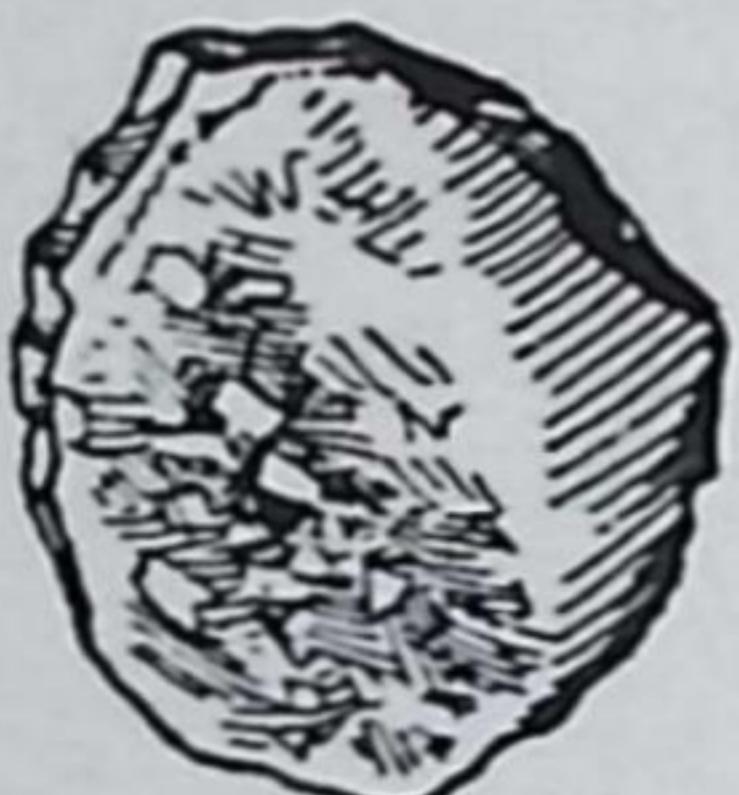
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material may be purchased if the purchaser is willing to pay the price. And in speaking of price the dealer gets the most that he can for his rough. This is as expected but in many cases the dealer misjudges the value of the stone to be cut from a piece of rough, overvaluing it. When this is the case, unless the cutter rejects the piece, he is in for a loss. This is not necessarily intentional on the dealer's part. Many pieces of rough are extremely difficult to judge and the finished stone may be very much better than anticipated or it may be a total loss. It must be remembered that the cutter takes the greatest risk since he cannot return a stone once he has touched it to the grinding wheel. The writer has cut opal costing five dollars an ounce and obtained one or more finished stones that brought five dollars a carat. Some rough, selling at seventy-five dollars an ounce produced stones that would not bring a dollar a carat. Variations of the second situation are unfortunately more common than the former. In any event, when buying opal rough one's eyes should be open and any questionable material rejected before touching it to the grinding wheel.

The value of rough opal is determined by the quality and extent of the fire layers. If the entire piece is of fire quality it is undoubtedly a good piece. Usually the fire occurs in layers of varying thickness running through the piece of rough. The proper judging of these fire layers taxes the skill of the purchaser.

Rough opal as sold in this country comes in small irregular shaped pieces. Many times it is in flat sections but frequently in small chunks. It invariably is covered with a sandy stone or hard clay. This layer may largely obscure the fire in the opal and it may also conceal the defects which the fire layer may contain. Upon examining a piece of rough the character and extent of the stony layer should be noted carefully. Frequently there is so much of this stony layer that the weight loss upon cutting is very excessive. Some pieces will show a weight loss above 85 per cent and remember all of that weight loss is paid for in the cost of the piece of rough. Unless the opal cut from the piece is of very good quality the cutter must take a loss on it. Also try to determine what the shape of the stone will be

after the stony layer has been cut away. Too often the shape is such that only a very small cabochon may be cut from it. This is particularly true if the cut-away piece has the shape of a tetrahedron, if it is too thin, or if it is such that the fire lies on a concave surface. In any of these cases the value of the finished opal may not cover the cost of the rough. The density of the fire layer to light is quite important. If it is white and too opaque it may not let the color of the fire layer through and the resulting stone will be a disappointment, lacking the necessary fire to make it a gem.

If the fire layer is quite transparent look at strong light through it. In this way it is often possible to determine the extent and thickness of the fire layer. It will also show up defects in the fire layer due to penetrations of sandstone through it. Dirt also becomes visible. Examine the piece from all sides and note any variations in thickness.

Many times the fire layer as observed from the edge shows very good coloring. It often occurs that after removing the sandstone and looking at the piece at right angles to the surface it loses practically all of the beautiful fire and becomes about as interesting as a piece of dirty glass. Sometimes such a piece may be made up into a doublet with a black background and some of the color again made visible. If there is any doubt that this can be done reject the piece.

Having decided to accept a piece of rough the next thing to do is to remove all of the stony material and again hold it up for inspection. Now any penetrations become plainly visible and other defects will manifest themselves. The occurrence of cracks or fractures must be noted. The position of the best fire in relation to the piece as a whole will determine how the cabochon should be cut. The best fire should be brought to the center of the cabochon if possible.

The next thing to decide is what size cabochon to cut. It is usually best to cut as large a stone as possible since it usually involves the least waste. If one wishes to cut for sale to jewelers he must stick to the standard jewelry sizes. Odd sizes may be sold to costume jewelers but unless the cutter has a market for such shapes he should stick to the standard sizes and shapes.

Before cutting the cabochon it may be necessary to trim or to split the piece



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See article on Page 198

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of rough to avoid loss in the grinding process. For this purpose I recommend the use of a very thin cut-off wheel. Diamond wheels may be used but they are not necessary since opal may be readily cut with a silicon carbide wheel. A good wheel for this purpose is an 80 mesh silicon carbide wheel, dense and very hard, bonded with resinoid. A 4" wheel of this type, 1/32" thick, running at 1150 r.p.m. will cut very rapidly. Instead of using messy oil, water may be used, playing a thin stream of water on the opal at all times during cutting.

The contour of the cabochon must be a true circle arc as viewed both longitudinally and laterally. The cutter can do no better than to follow the instructions given by Mr. Monlux in the February, 1951, issue of the *Lapidary Journal*. The polish must be perfect and entirely free from flats. No shoulder around the edge is permissible. It usually makes a better looking stone if the back side of the opal is rounded slightly and given a good polish. One purchaser of opals stated that he did not care how the back looked as long as the front side was perfect but this view is not shared by most buyers. Also a small perfect stone is more valuable than a slightly larger one containing a flaw. The flaw may be a piece of dirt, a stone penetration, a small crack or poor workmanship in cutting. All are equally damaging to the value of the gem.

In case there is a small crack in the finished stone it may sometimes be made entirely invisible by proper treatment. Some lapidaries place the cracked opal in a thin oil over night. The oil penetrates the crack making it become invisible. However, in time the oil sometimes will ooze out exposing the crack again. A better way is to heat the opal on a piece of paraffin wax, melting the wax slowly and letting the opal lie in the melted wax. Care must be taken not to heat the opal too rapidly or the crack may become larger. It is good practice to place a drop of water in the molten wax and as soon as the drop begins to sputter discontinue the heating. Allow the opal to cool in the wax and do not remove it until the wax has started to solidify. The opal may then be removed and excess wax wiped off. The paraffin is solid at ordinary temperatures and will not ooze out.

Douplets are not made with any thought of deception. They are sold as douplets and often bring a price as high as a solid stone. The object of making a doublet may be to utilize a piece of opal too thin to make a cabochon or they may be made to bring out the fire with a suitable background for a thicker piece. In case the piece of thin fire opal does not need a dark background to bring out its color it may be mounted on another piece of opal. If it does need such a background it may be mounted on a piece of suitable material to bring out its best color. Usually a black background does the trick and for this purpose use such materials as black onyx or other black stones. Black obsidian is very suitable since it has about the hardness of opal and will not undercut when polishing the doublet.

One process for making the doublet is as follows: The piece of opal from which the doublet is to be made is ground flat on the side showing the best fire. To get the surface absolutely true it is finally ground by placing a little 220 mesh carborundum on the surface of a flat piece of machined steel plate and wetting it with a little water. The opal is ground by pressing it gently against the flat steel and grinding with a circular motion. This will take only about a minute and should be discontinued as soon as inspection shows the surface of the opal to be absolutely true.

It is then cleaned carefully of all abrasive and is ready to be cemented to the backing material. Also prepare the backing material in a similar manner, grinding the flat side true on the steel plate and subsequently removing all abrasive from it. After drying, the backing material is heated over an alcohol flame and sealing wax is applied to the flat surface. At the same time heat the opal very gently about three inches above the flame. While the sealing wax is thoroughly molten place the backing on the bench, with the waxed side up. Now press the piece of warm opal firmly against the back, using a circular motion to insure complete contact between the two pieces. Place the assembly between the jaws of a spring battery clamp or other spring clamp. Heat further very gently on the back side to insure the removal of all air from between the two parts of the doublet. Allow it to cool and then remove from

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the clamp. It is now ready to be ground. The color of the sealing wax used is usually immaterial since the layer between the two parts of the doublet is so thin that it shows practically no color. The combined stones are now handled the same as any solid stone.

In dopping the doublet it is necessary to use a dopping wax which has a lower melting point than the sealing wax used for combining the two stones. Otherwise the two parts of the doublet will separate while being attached to the dop stick. A very satisfactory cement may be made by fusing together one part by weight of beeswax and two parts of powdered rosin. Such a cement can be used to stick the opal to the dop stick without heating the opal at all. However, the surface of the opal must be entirely dry and free from oil. This cement has an added advantage, for if the doublet is ground or polished too fast so that it heats up, the wax will melt and release the stone from the stick, saving it from destruction.

The grinding is done on a six inch wheel of 220 mesh carborundum turning at 400 r.p.m. and then is finished on another wheel 660 mesh at the same speed. It is then sanded on a rubber bonded wheel of 880 mesh, 4" diameter, running at 600 r.p.m. When all wheel marks and flats are removed it is ready to be polished. During all of the grinding and sanding it is necessary to have a fine stream of water playing on the stone at all times. In shaping the doublet the opal layer must extend to the maximum edges with the backing material cut away slightly so that when the stone is mounted the backing will not show.

Use a hard felt wheel for polishing. Thoroughly wet the surface of the wheel and then apply a slurry of cerium oxide. Keep the stone in motion as it is being polished to prevent overheating and do not let the polishing wheel become dry. A 6" wheel running at 700 r.p.m. gives about the right speed for this operation. When the polishing is completed remove from the dop stick and remount so that the back may be ground. If the cement recommended above is used it will not be necessary to heat the doublet. The back may be ground to any desired thickness and contour.

It must be borne in mind that the trade is very fussy about the appearance

of an opal and only expert workmanship is accepted. The buyer wants the maximum in brilliance and absolute freedom from flaws. Furthermore he wants to buy it at the lowest price for which the cutter will sell. Occasionally the margin of profit is good but too often the price offered by the buyer will not cover the cost to the cutter of the rough from which it is made. The largest lapidaries are able to purchase their rough at the mines and of course the price paid by them is much less than would be paid by a cutter who might buy his rough in small quantities. For that reason they can undersell the small cutter. So if one wishes to get in this field he should know all of the facts.

* * * * *

REPORT ON SOME OF THE CONVENTIONS

Just as we go to press we cull from a number of reports coming to us from reliable sources the following figures: The meeting of the California Federation of Mineralogical Societies at Angels Camp, Calif., was attended by 1946 mineral society members in addition to 2544 other visitors who paid admission. This makes a total of 4490.

The combined meeting of the American and the Rocky Mountain Federations of Mineralogical Societies held at Canon City, Colo., was attended by 478 mineral club members plus 1780 other paid admissions. This makes a total of 2255. Between 1500 and 1800 persons are reported to have attended the Saint Paul, Minn., meeting of the Midwest Federation of Mineralogical and Geological Societies.

It is also reported that there were 38 dealer exhibits at Angels Camp, 44 at Canon City and 10 at Saint Paul.

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Genuine One Carat Facet Cut Stones
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Genuine Quartz Crystal Stars—5 point, tip
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◆ The Slab That Photographed Itself

By V. SABIN

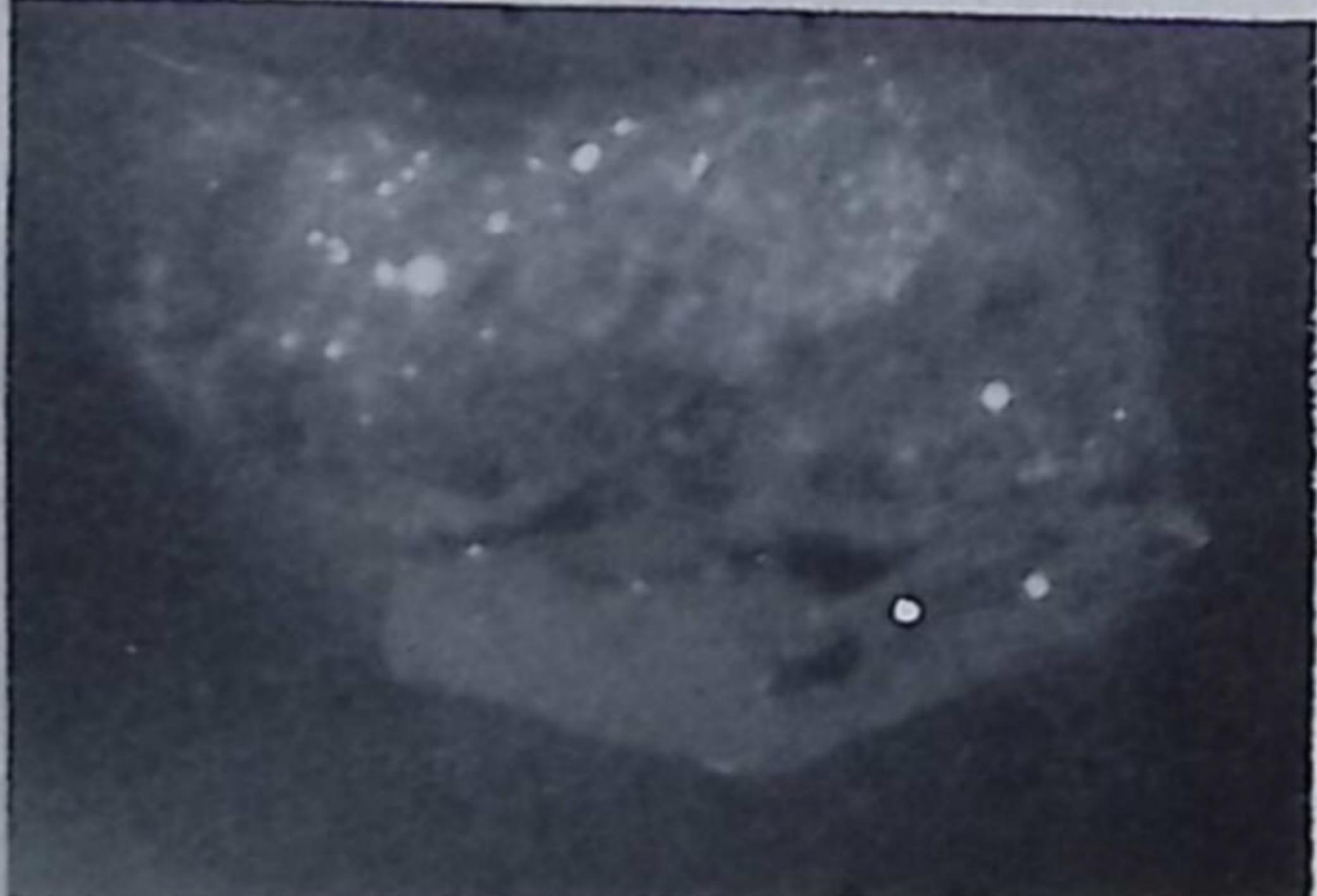
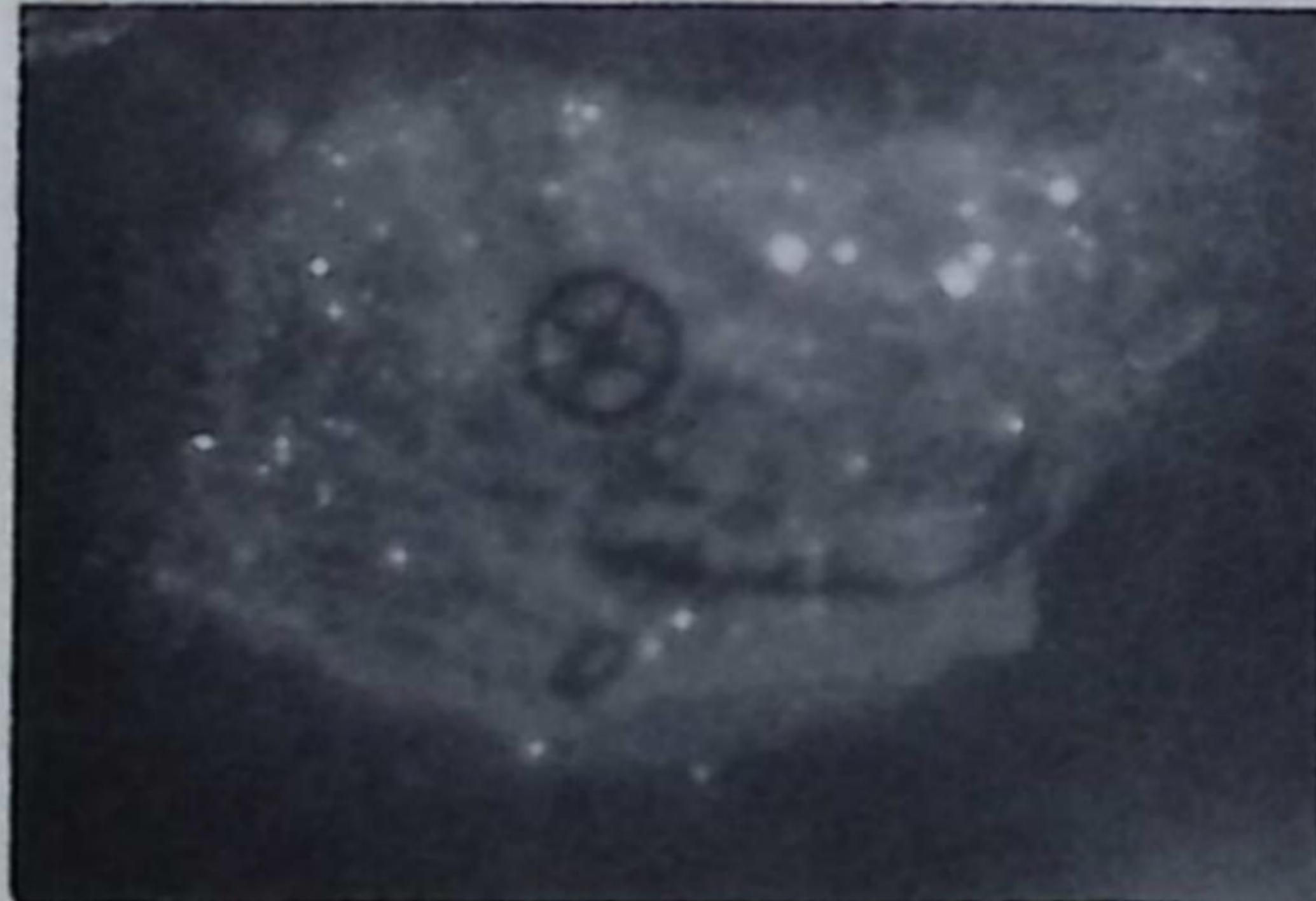
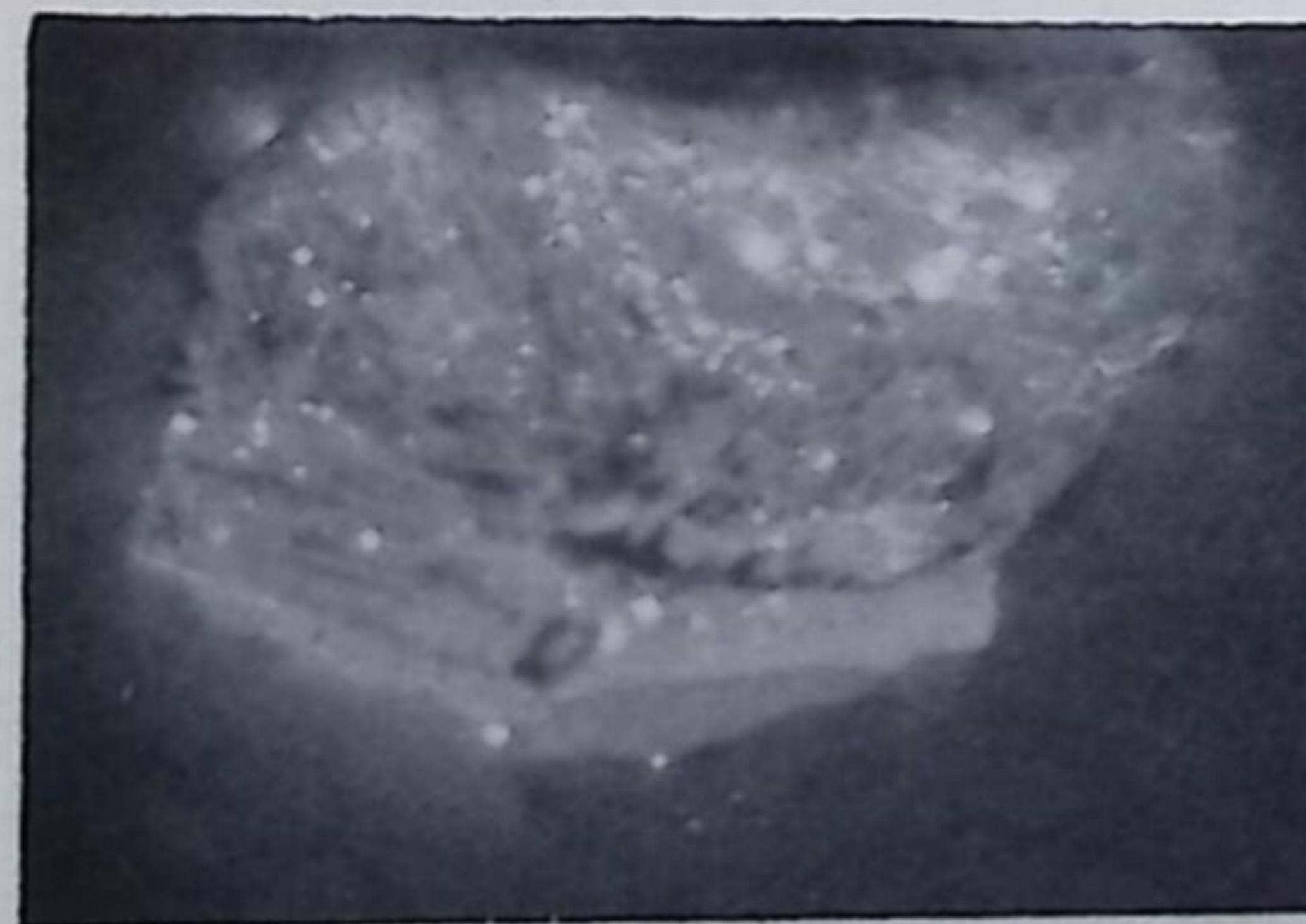
723 Steves Ave., San Antonio, Texas
Member of *San Antonio Rock and Lapidary Society*

Several months ago, Mr. J. B. Upton of Llano, handed me a small slab of rock. It was just an unassuming specimen of a black glassy mineral with splashes of dull dark reddish or maroon colored inclusions. It was not a "polishing" rock and did not look at all as if it would ever attain the position of being a "braggin'" rock. After hearing his description, I felt that perhaps the old adage "appearances are often deceiving" might be correct, at least in this instance.

Mr. Upton, who is a mineralogist, explained that he had identified it as gadolinite, a thorium mineral which is slightly radioactive. He wondered if I

could show this activity photographically on some of my sensitive materials.

We used 4 x 5" Kodak Super Pan-chro Press Type B film and in the total darkness of the photo laboratory we placed the slab sandwich-like between two unexposed films and securely fastened it to the films by use of $\frac{3}{4}$ " adhesive tape. The films and the slab were then placed between a number of pieces of cardboard in an empty film box. The cardboard acted as packing so that there would be no possible movement of the film. The box was then sealed, labeled, dated and put away. It was our intention to leave it for only several weeks before finishing



Photograph of the slab of gadolinite made by its own invisible light or radiations. The upper two photographs are from the 87 day exposure, the lower two from the 13 day exposure. All four negatives were placed together and exposed at the same time so that prints showing the proportionate intensities of the emanations would be secured.

TWO IMPORTANT NEW BOOKS

CHINESE JADE CARVING By S. Howard Hansford

This newest book on jade is published in England and by special arrangement we have imported it for our customers.

The book is well bound in boards and contains 32 pages of plates plus another in color and maps of the jade locations. It contains 180 pages 9 3/4" by 7 1/2" and it is really a buy in today's book market.

This authoritative and carefully documented work represents a new and important step forward in the study of Chinese jades. The author spent many years gathering and sifting material in museums all over the world and in the centers of Chinese production. He also made a search of the Chinese literature for writings throwing light upon the history of the craft. His inquiries carried him to the jade workshops of Peking and to the many great jade collections in America.

The exposition of the technique of jade carving (the main theme of the work) is especially valuable, since no such circumstantial account of it has previously been available. Many controversial questions are discussed and some original solutions proposed. The conclusions undoubtedly present the most illuminating review of this fascinating subject that has been printed.

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This paper-backed book is published by the Lapidary Journal as a service to the amateur lapidaries of America.

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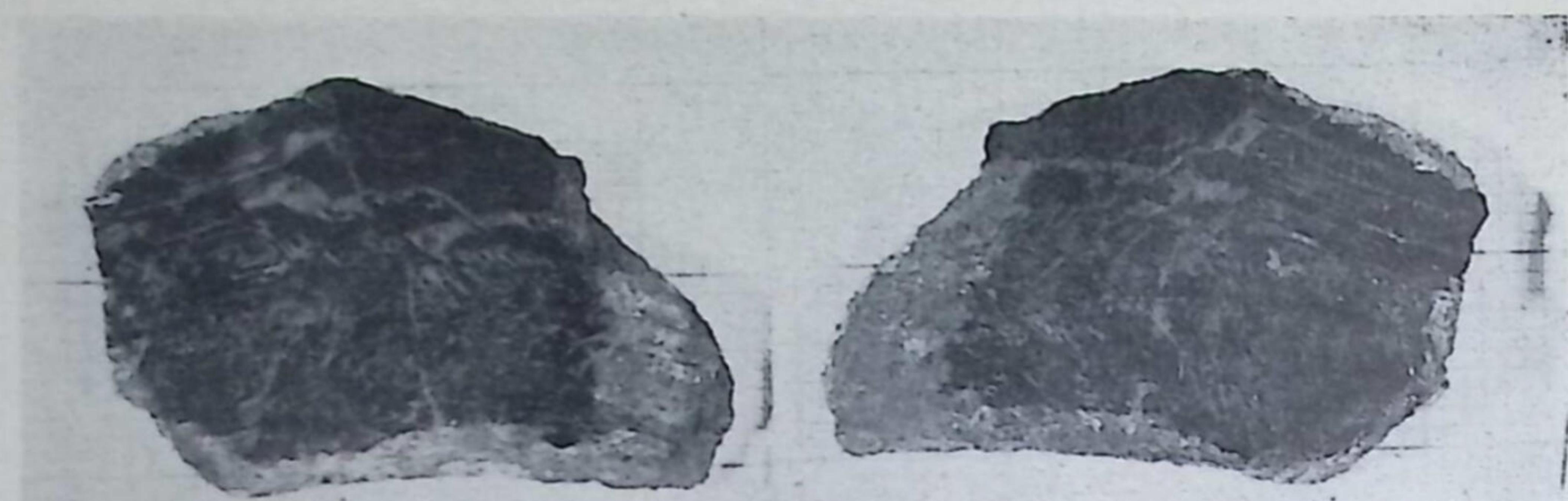
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The two sides of the gadolinite specimen. It was placed on cross section paper, 10 lines to the inch so that an accurate idea as to its size and location and size of the emanations could be secured.

the experiment but due to the fact that we were moving at the time, the box was misplaced and only located after the expiration of 87 days.

Upon development, we were delighted to find that it was radioactive and that we had a very distinct picture of the slab taken by its own radiations. We immediately prepared a second set of film in the same manner as outlined above and in addition a small brass watch sprocket was placed on each side of the slab between it and the film, protecting the film from the emanations from the slab and causing a clear or transparent design on the film. This gives an interesting contrast design on the film and prints.

This time the film box was not misplaced but at the end of thirteen days it was opened and developed in fresh Microdol Developer at 60° F. for 20 minutes as before, a careful record of every phase of the experiment having been kept, so that should proportionate intensities or duplication of the test be desired we could duplicate any or all parts of the test. The results this time were even more successful in some ways than the first test, as the strong emanations did not build up as heavily in the short exposure and they are much clearer and distinct.

In a recent letter from Mr. Upton, commenting on the slab and the first pictures, he says in part as follows: "The pictures confirm what I had suspected in regard to the composition of the mineral sample; that there are several different minerals mixed in the same rock. Parts of the material appear to be a reddish feldspar which shows up dark in the picture. Then there is the black glassy mineral which I have iden-

tified as gadolinite, which is primarily a thorium mineral and is weakly radioactive. It appears gray in the picture. What the picture shows up as unexpected items are the small bright "hot" spots sprinkled through the entire mass of the specimen. There is little or nothing in the appearance of the specimen to account for them. I am guessing that the bright spots on the picture were caused by tiny inclusions of uranium in the gadolinite.

"I perhaps told you of finding the rocks, two pieces only, in the southeast part of Llano County, Texas. Subsequent search of the area did not yield any more of the mineral or anything related to it. I then looked at some specimens of gadolinite from the once famous Barringer Hill location, (now under the water of Lake Buchanan) in the geology archives of the University of Texas. This mineral was so much like the mineral of my find that I concluded that my specimens were from the Barringer Hill location and had been carried to the present location by some rockhound of a past generation. The specimens were found near some springs which were the camp sites for Indians many years ago and it was one of the first locations settled by the whites when they came into this county. There are several old chimneys still standing within a few hundred yards of where I found the specimens.

Gadolinite is one of the rare earth minerals and is of rather indefinite composition. It contains beryllium, iron, yttrium, silica and an indefinite amount of thorium, uranium, probably minute amounts of radium and some, or all, of the "rare earth" group which are cerium, lanthanum, didymium, erbium, etc.

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<i>Gem Testing</i> By B. W. Anderson	5.00
<i>The Art of the Lapidary</i> By Francis J. Sperisen	6.50
<i>Cabochon Jewelry Making</i> By Arthur and Lucille Sanger	3.50
<i>Gem Cutting</i> By J. Daniel Willems	3.95
<i>Jewelry, Gem Cutting and Metalcraft</i> By W. T. Baxter (New Edition)	4.50
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♦ News of the Societies



LOS ANGELES LAPIDARY SOC. recently elected James Underwood as president. A field trip was made over the long 4th of July weekend to the Monterey jade deposit.

* * * *



SAN DIEGO LAPIDARY SOC. recently heard Frank Dennis, one of their founders, in a talk on the polishing of flat surfaces. "Dee" Dietrich, former President, was elected President of the California Federation—the first time a lapidary group has been so honored.

* * * *



PASADENA LAPIDARY SOC. recently heard C. N. Laird give a lecture on carving Chinese snuff bottles. He exhibited his own collection. The society plans a lapidary exhibit in the Pasadena Library during October and November. At the June meeting Dick Mitchell of M.D.R. Mfg. Co. showed his new film on gem cutting.

* * * *



CHICAGO LAPIDARY CLUB had more than 1800 registered guests at their recent gem and jewelry show. 224 entries were submitted by 56 contestants from the Chicago area.

* * * *



SAN ANTONIO ROCK & LAPIDARY SOC. carried off many honors at the recent Texas state mineral and gem show at Ft. Worth.

* * * *



SAN DIEGO MINERAL & GEM SOC. is making plans for their fifteenth annual show. See details in Calendar of Events. They will host the California Federation convention in San Diego next year.

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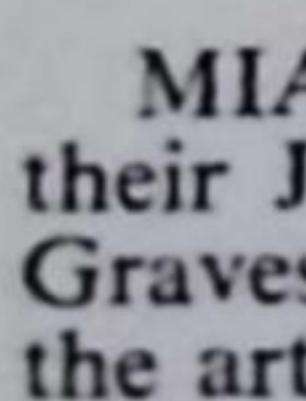
COMPTON GEM & MINERAL CLUB (Calif.) are also planning their annual Fall show. See Calendar of Events.

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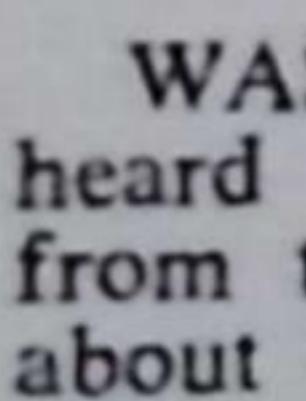
CHICAGO ROCKS & MINERAL SOC. carried a helpful article on the problem of wet sanding with drum sanders in their June issue of the *Pick and Dope Stick*.

* * * *



MIAMI MINERAL & GEM SOC. held their June meeting at the home of Henry B. Graves during which there was a forum on the art of gem cutting and a viewing of members' bragging pieces.

* * * *



WASATCH GEM SOC. (Salt Lake City) heard Frank Christensen, recently returned from the African diamond fields, in a talk about them in June at an open air meeting held in the garden of the W. H. Saylers.

SACRAMENTO MINERAL SOC. recently heard Julian A. Smith on the subject "Calcite and Some of Its Crystal Forms." The talk was illustrated with slides, diagrams and outstanding specimens. Other members brought their calcite specimens. John H. Moon, a long time worker in the society's interests, was presented with Honorary Membership and a Mineralight.

* * * *

LONG BEACH MINERAL & GEM SOC. (Calif.) heard Jerry Laudermark of Claremont College on *Rocks From Hades* at its June meeting. Their show date has been changed to August 9 and 10. See Calendar of Events.

* * * *

CHEYENNE MINERAL & GEM SOC. (Wyo.) is the new name of the former Cheyenne Geology Club. The club now has 99 members and meets the first Friday in the Woman's Club Rooms of the Carnegie Library.

* * * *

GEORGIA MINERAL SOC. (Atlanta) recently heard a talk on synthetic gems by a Linde representative.

* * * *

GLENDALE LAPIDARY & GEM SOC. (Calif.) reportedly clocked 9469 visitors at its May show. With uncounted visitors through the back door the attendance was estimated at more than 10,000, the biggest show the society ever had and probably the largest in the nation this year. This society deserves great credit indeed for their fine yearly exhibits. 55 firms reportedly had dealer exhibits. \$1000 has already been earmarked for next year's show.

* * * *

SOUTHWEST MINERALOGISTS (Los Angeles) report a net profit of \$236 from their recent 15th annual show. Dorothy Craig, new Vice President of the American Federation of Mineralogical Societies, recently gave a talk on coal, a mineral that appears in very few collections. Many serious mineral collectors in California have never seen a piece of coal. We know because we have a piece of coal on a shelf in our office and many visitors do not know what it is. We have a lot of fun with it.

* * * *

GEM & MINERAL SOC. OF SAN MATEO COUNTY (Burlingame, Calif.) had a unique evening in May. Florence Underwood conducted a fine musical program around the theme "Interpretation of Gems in Melody." The society had 10 cases of jade at their recent show. J. C. Fletcher of San Francisco gave a talk on diamonds at the June meeting.

* * * *

MARICOPA LAPIDARY SOC. (Phoenix, Ariz.) is making great progress under their new President Ted Johnson, formerly stationed at the Meteor Crater Museum for several years.

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Calendar of Events

August 9-10—Gem and mineral show of the LONG BEACH MINERAL & GEM SOCIETY. To be held at Sciots Hall, 6th & Alamitos, Long Beach, Calif.

August 17—Eighth annual Rockhound Rendezvous at Gem Village, near Bayfield, Colo. Free admission and show space. Write Lottie Shipley at Bayfield (Gem Village).

August 23 to 25—Annual convention and show of the NORTHWEST FEDERATION OF MINERALOGICAL SOCIETIES. To be held at College of Idaho campus at Caldwell, Idaho (30 miles from Boise). Field trips on August 26-27-28. Commercial displays under direction of *American Gem and Mineral Suppliers Ass'n*. For space write Thomas Warren, 145 Pasadena Ave., South Pasadena, Calif.

August 27 to Sept. 1—Annual gem and mineral show of SAN JACINTO-HEMET GEM STONE AND MINERAL CLUB. To be held in conjunction with the Farmers Fair of Riverside County at Hemet, Calif.

September 6-7—Rockhound show of the WHITTIER GEM AND MINERAL SOCIETY. To be held at Smith Memorial Hall, College and Pickering Aves., Whittier, Calif. Free parking. Commercial displays.

September 20-21—Third annual show of the SOUTH BAY LAPIDARY SOC. to be held at Clark Stadium, Hermosa Beach, Calif.

September 27-28—Fifteenth annual mineral and gem show of SAN DIEGO MINERAL & GEM SOC. To be held in Spanish Village, Balboa Park.

October 4-5—Annual gem and mineral show of COMPTON GEM AND MINERAL CLUB. To be held at Veterans of Foreign Wars Hall in Compton, Calif.

October 9-10-11—Second annual convention and show of the EASTERN FEDERATION OF MINERALOGICAL AND LAPIDARY SOCIETIES. To be held at Essex House, Newark, N. J. Field trip to famous Franklin Furnace mineral locality on Oct. 12. For reservation write Warren L. Duncan, 311 Union Ave., Hackensack, N. J. For dealer space write William B. Aitken, 63 Lexington Ave., Westwood, N. J. See complete program on page 213.

October 18-19—Fifth annual lapidary and gem exhibit of the HOLLYWOOD LAPIDARY SOCIETY. To be held at Plummer Park recreation building, Santa Monica Blvd., Hollywood, Calif. Details later.

November 8-9—Mineral and gem show of the CLARK COUNTY GEM COLLECTORS. To be given in War Memorial City Hall, 400 Stewart St., Las Vegas, Nevada.

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Cameos (16x12 mm.) in jade, lapis lazuli, mother-of-pearl and other materials.

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Opalized Obsidian

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FLOR DE AMAPA, a pink epidote with radiating crystals resembling flowers. Looks like a mosaic when polished.

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GEM-LAP	Faceting head with stand-rod	\$37.50
Sets of 13 brass dops	7.50	
45° angle head for tables	3.50	
Triple V-block	5.50	

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POLY D-12 ARBOR $\frac{3}{4}$ " shaft—\$22.95
each. Cerium Oxide—\$2.50 pound.

Wholesale prices to dealers for resale
Burnishers, 85c each, Ring Clamps, \$1.50
each. Hard steel ring mandrels (Solid)
\$5.00 each.

FACETING LAPS

For $\frac{1}{2}$ " arbors		Each
Lucite	6"	\$3.60
	8"	4.95
Lead	6"	6.50
	8"	7.95
Type Metal	6"	6.50
	8"	7.95
Brass	6"	6.95
	7"	8.95
Iron	6"	4.50
Tin	6"	6.75

Brass well lap, 8" diameter, $\frac{1}{2}$ " arbor,
has well to take a 6" lap—\$11.95 each
Also, lead, lucite, type metal, brass and
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1 1/2 mm.		4.00
Foregoing sizes not recommended for flexible shaft hand pieces		
2 mm.		4.25
2 1/2 mm.		4.50
2 3/4 mm.		4.75
3 mm.		5.00
3 1/2 mm.		6.75

REAMERS WITH 3/32" SHANK		Each
2 mm. to 2 1/2 mm.		\$4.50
2 1/2 mm. to 3 mm.		5.00
3 mm. to 3 1/2 mm.		6.50

Onyx Hole Beveler—3/32" shank \$10 each
Plus sales tax on California Purchases
All Tools are Diamond impregnated to the
Core and have $\frac{1}{4}$ " depth of Diamond ex-
cept where noted.
Prices furnished on request for other spe-
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State arbor hole size

25% deposit required on all C.O.D. orders

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"THIS ONE CAME FROM AN OLD COLLECTION . . ."

(As reported by Robert Klinger, 606 S. Division St., Ann Arbor, Mich.)

Night school class in lapidary was turning out to be great fun. The fee had been lifted from the Italian vase substituting for the old familiar sugar bowl. The first night and the second went well, a quarter for a Sweetwater agate that ended up a lot less oval than the template had ordered, and bumpy enough in spots to excite a phrenologist. Third night was smooth—the Brazilian sardonyx (another quarter spent) came out more like a cabochon should. But this continual expense, a whole quarter a week, had to stop. Our budget didn't allow such luxuries!

Then I remembered! Years ago my aunt had an unfortunate experience of having tenants move in the night, taking the rent due, the light bulbs, and a few sundry other things like faucets and the hooks from the closets. Probably as consolation they had left a box marked "MINRELS." Even then, at eight, pretty stones had fascinated me, so she gave them to me. Would there be a hunk of something in there that would cut? After a shower and a change of clothes to clear off the dust of twenty-five years, I opened the box and there were all sorts of things — "pierites," "quarts," and other such labelled things. One was a chunk of something marked "grenish quarts," and it was pretty.

When Tuesday at 7:00 rolled around I proudly took this piece to class. The teacher was busy with others and I was confident so I went right to the huge twelve inch grinding wheel and started to grind one half off to make it flat. This was fun. I dreamed of the nice cab I would get, and then dreamed of the other pieces in the old collection, none as pretty as this, but some others would cut. Then I jumped as the teacher shouted above the sound of seven motors, "Robert, what are you doing?" I told him, and showed him the stone, now about half cut away. He looked several long looks and then told me to cut it big, into a double cab to save as much as possible. He didn't know what it was, but thought it was a "good stone."

So I started cutting a double cab, quite a feat when I never had been able to cut even a single one! Every week

the curator of the University mineral museum came in. He was well known for his ability to spot-determine minerals. When he came tonight I'd ask him what it was. So I mused as I proceeded to grind away more and more. At last it took shape as a rough and bumpy double cab, and I could take it to the finer wheel—just as Mr. Denny, the Curator, came in.

I braved the mob clustered around him like worshipping neophytes and at last had my turn. He took the piece, now about one-third of its original size. His eyes grew big, and all he said for several minutes was "good Heavens" and things of that startled nature. "For Heavens sake, Bob, don't cut away any more, just smooth it up and polish it." "Why?" I asked, "What is it?" "It's the best piece of chrysoprase from the Ural mountains I've ever seen," was his somewhat agitated reply. I still didn't know what I had. Chrysoprase? Ural Mountains? I could hardly wait to get home.

When I did go home, I told my wife the story and we started through a pile of catalogs and various library books on mineralogy I just happened to have around, naturally somewhat overdue. "Here's something," my wife said. "It says here that high grade chrysoprase from the Ural Mountains hasn't been available since 1913 and was rare even before then!"

The pace got hotter—and finally in one of the catalogs was a little ad, all ringed with a black box: "From an old collection. Chrysoprase in the rarest unusual shade found only in the Ural Mountains before World War I. When this is gone there will be no more. \$10 a carat."

Ten dollars a carat! My remaining double cab was over sixty carats, and I had ground away about one hundred! Literally, \$1,000 down the drain.

The next week I bought the nicest agate for a quarter.

★ ★ ★

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No undercutting—slabs only—\$.75 sq. in.

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THE NORTHWEST SHOW

A trip to the Gem & Mineral Show in Caldwell, Idaho, August 23, 24 and 25, will illustrate the thousands of beautiful specimens which are available in that general area, according to Tom Warren, Chairman of Exhibits. Visitors will be amazed at the beautiful agate that can be found on field trips which will be conducted immediately following the convention.

"There is a very good reason for the naming of Idaho as the Gem State," says Warren. "Within the boundary of this state are located some of the best gems and minerals that are to be found anywhere in the United States. Rockhounds will find this especially true because of the great variety of agate, petrified wood, obsidian, jasper, nodules, etc. The mineral areas around Caldwell, Idaho are literally a Rockhound's Paradise."

Some of the finest agate areas in the United States are only a short distance from Caldwell. Conducted field trips will be taken to these choice locations during the week of the show. Graveyard Point, where beautiful plume agate will be secured, and the mine dumps at the ghost town of Silver City, center of the Mother Lode area of Idaho, will be visited. At Beaver Hill collectors will find the finest scenic nodules of any area in the country. Tubular, vein, and fortification agate are also available with a tremendous variety of petrified wood in many different locations.

Another feature of the Gem & Mineral Show will be a big Buckaroo barbecue dinner being held this year in place of the annual banquet. Several collections of some of the world's outstanding gems and minerals of irreplaceable beauty will be on display in the exhibit hall, including the half-pound rainbow opal of Leland Quick, one of the largest opals in existence. Also on exhibit will be the pictures in tigereye and jade, made by J. Lester Cunningham of Chicago. These appeared on the covers of the October 1951 and April 1952 issues of the *Lapidary Journal* and were fully described therein.

The Gem & Mineral Show is an annual event of the Northwest Federation of Mineralogical Societies and this year it is being sponsored by the Owyhee Gem & Mineral Society of Caldwell, Idaho.

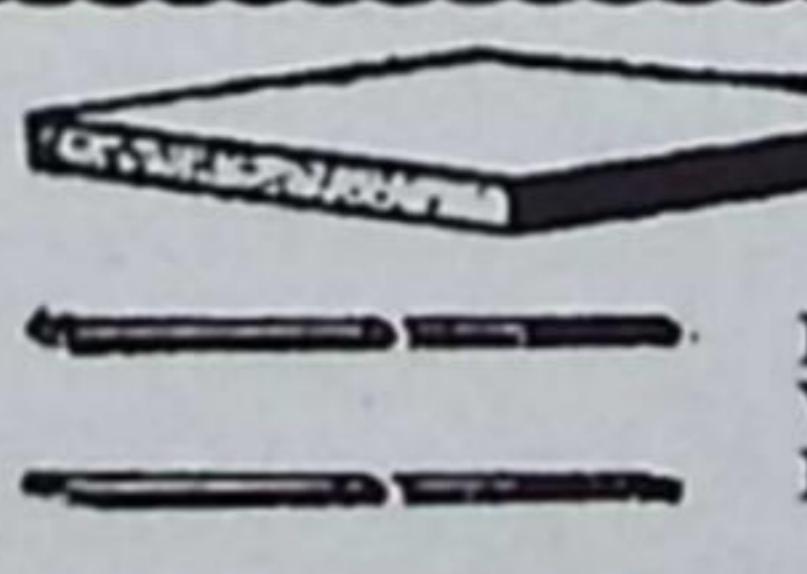
LOS ANGELES COUNTY FAIR TO HAVE BIG GEM AND MINERAL EXHIBIT

The Los Angeles County Fair (largest in America) will be held this year at the Pomona, Calif., fairgrounds on September 12 through the 28. Complete details are not available as we go to press but we understand that quite a number of Los Angeles county gem and mineral dealers have taken space and that several county societies have promised displays.

"This is only the third year that we have had the facilities for putting on a Gem and Mineral exhibit," writes Monte R. Yerkes, Superintendent of the display. He continues "Each of these years we have relocated the show—each time to much better advantage. This year the gems and minerals and the mineral dealers will all be centrally located in our big Palace of Agriculture, which will provide a very colorful and artistic setting, with wide aisles providing ample room for the circulation of the general public in and among the mineral exhibits. We are still in the process of arranging for that part of our mineral show, aside from the exhibits of the various mineral societies.

"The management of this Fair is fully aware of the widespread interest in minerals and despite the fact that we have over two hundred permanent buildings, there is still a great need for adequate room to house a comprehensive mineral exhibit. Perhaps in the not too distant future such a place could be provided that could be used more or less as a permanent mineral museum.

"It is certainly most inspiring to see the intense interest of the members of the mineral societies as they arrange their gems and minerals for the enlightenment of the public, and all without any thought of any monetary remuneration. This indeed is very refreshing in these days when so great a part of our activities are so highly commercialized."



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SHIPLEY RETIRES AS G.I.A. HEAD LIDDICOAT NEW BOSS

Robert M. Shipley, who retired March 31 as Director of the Gemological Institute of America, was, with Mrs. Shipley, guest of honor at the annual banquet of the Retail Jewelers Research Group held May 14 at the Lakeshore Club, Chicago.

O. C. Homann, C. B. Brown Company, Omaha, presiding as toastmaster, introduced Percy K. Loud, Wright, Key & Company, Detroit, who presented to Robert and Beatrice Shipley a book of letters representing expressions of appreciation to them from industry leaders in all parts of the world.

"The greatest reward that can be earned by a man who has lived his three score years," said Loud, in making the presentation, "is the respect and admiration of his associates. The man who has left the world a little better than he found it has won the very highest honor that the world can bestow in the recognition by persons in his own industry."

As a token of esteem from the Retail Jewelers Research Group, Joseph Jessop, J. Jessop & Son, San Diego, presented three beautiful sterling silver trays to the Shipleys. On behalf of the American Gem Society — founded in 1934 by Shipley and early G.I.A. students—H. Paul Juergens, Juergens & Anderson, Chicago, gave them an exquisite jadeite carving mounted on a lapis lazuli base. The significance of the pine tree of jade, and the stork engraved on the base, is interpreted in the Orient as symbolizing longevity and a withdrawal from world cares.

C. I. Josephson, Jr., C. I. Josephson Jewelers, Moline, Illinois, Chairman, spoke of the closeness of association of members of his group with the Gemological Institute of America. "I view with pride," he said, "the fact that the Jewelers Research Group was one of the first in the trade to recognize the value of an educational program for jewelers. Through the years many of us have served on its governing board and have watched it grow into one of the most influential instruments in the industry for advancement of the jeweler."

It was during the years of his operation of a large retail jewelry store that

Robert M. Shipley became conscious of the lack of a centralized source to obtain all the information and background needed. His first step in acquiring the background he wished was an extended trip to Europe, where he traveled all over the continent visiting diamond cutting centers, museums, and manufacturing plants of all commodities which might be handled in the high grade jewelry establishment. At the same time he studied the courses offered by the Gemmological Association of Great Britain which were, at that time, the only ones available on the subject.

After two years in Europe, where he also lectured on decorative arts at the Louvre and other Parisian museums, Shipley returned to America prepared to apply his newly found knowledge of the merchandise he sold. At that time the country was in the depth of a world wide depression and the time was not conducive to the establishment of a new business. Awaiting a more propitious time, he opened art consulting offices in Los Angeles.

During his 16 years as a retail jeweler he had been instrumental in organizing groups of jewelers in his own state of Kansas, and elsewhere, feeling that through an interchange of knowledge, information, and ideas, members of the jewelry industry could attain a professional standing.

About this time, 1930, a number of farsighted jewelers in Southern California, members of the California Retail Jewelers Association, became imbued with the same idea and asked Robert M. Shipley to conduct an evening class for jewelers at the University of Southern California. When 60 jewelers from the area enrolled for the courses, he realized that he was not alone in his desire to be more fully informed.

When a series of written courses was requested because of the difficulty for most to travel the many miles for these evening classes, Robert M. Shipley began his work in earnest. It was then that the Gemological Institute of America became a reality. No project of this magnitude could have come about through the effort of one man, but it did need the leadership and organizing ability of Robert M. Shipley to set these forces in motion.

In the early days Shipley spent long hours in compiling the fundamental

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courses. His reference materials included facts and opinions advanced by authorities from all over the world. To include the findings of some of these scientists, it was necessary to translate works of French and German authorities, and to correspond with others in all parts of the world on subjects of gems, metals, silver, and jewelry. At the same time, he needed to convey his ideas to jewelers everywhere and in those early years Robert Shipley traveled as many as 25,000 miles yearly by automobile, calling on members of the trade.

Although most of the early students of the G.I.A. were experienced jewelers more than 45 years of age, they soon encouraged their employees and younger men of the industry to increase their effectiveness with the comprehensive knowledge of the jewelry business, which was available from no other source. Today, the results of their efforts can be seen as records show that during the past 21 years more than 10,000 have enrolled since the Institute came into existence.



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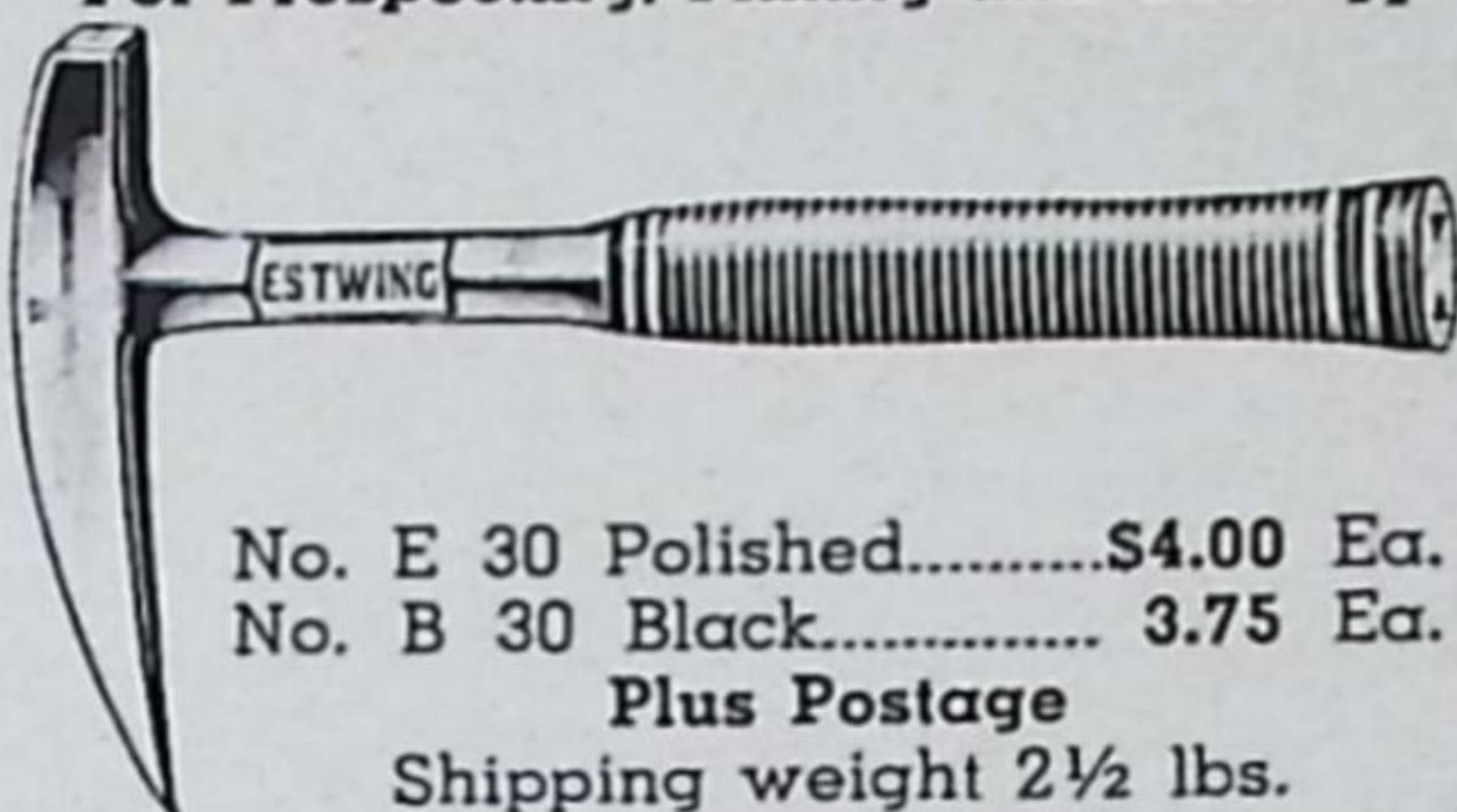
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1907, *In the Land of Pearl and Gold*, by Alexander Mac Donald (fiction). Published by T. Fisher Unwin—London, Leipzig.

1907, *The Pearl, Its Story, Its Charm and Its Value*, by W. R. Catelle. Published in Philadelphia and London.

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1908, *Memorial Rings*, by F. A. Crisp. From Charles II to William IV, in the collection of F. A. Crisp. Large volume privately printed (London) in edition of 150 copies. 1020 rings listed and described, and something of their history given where known. Published in 1908 at \$30.00.

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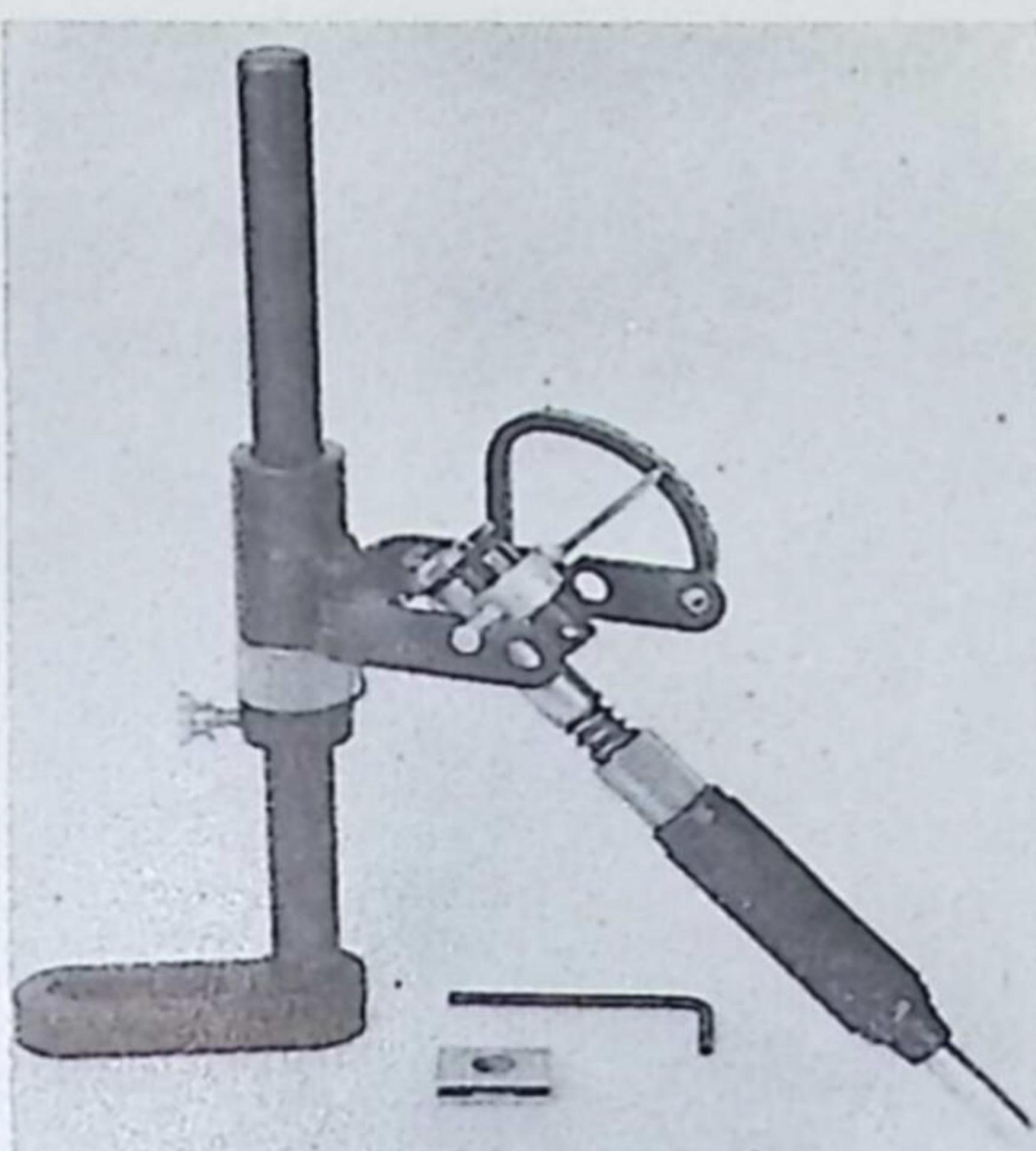
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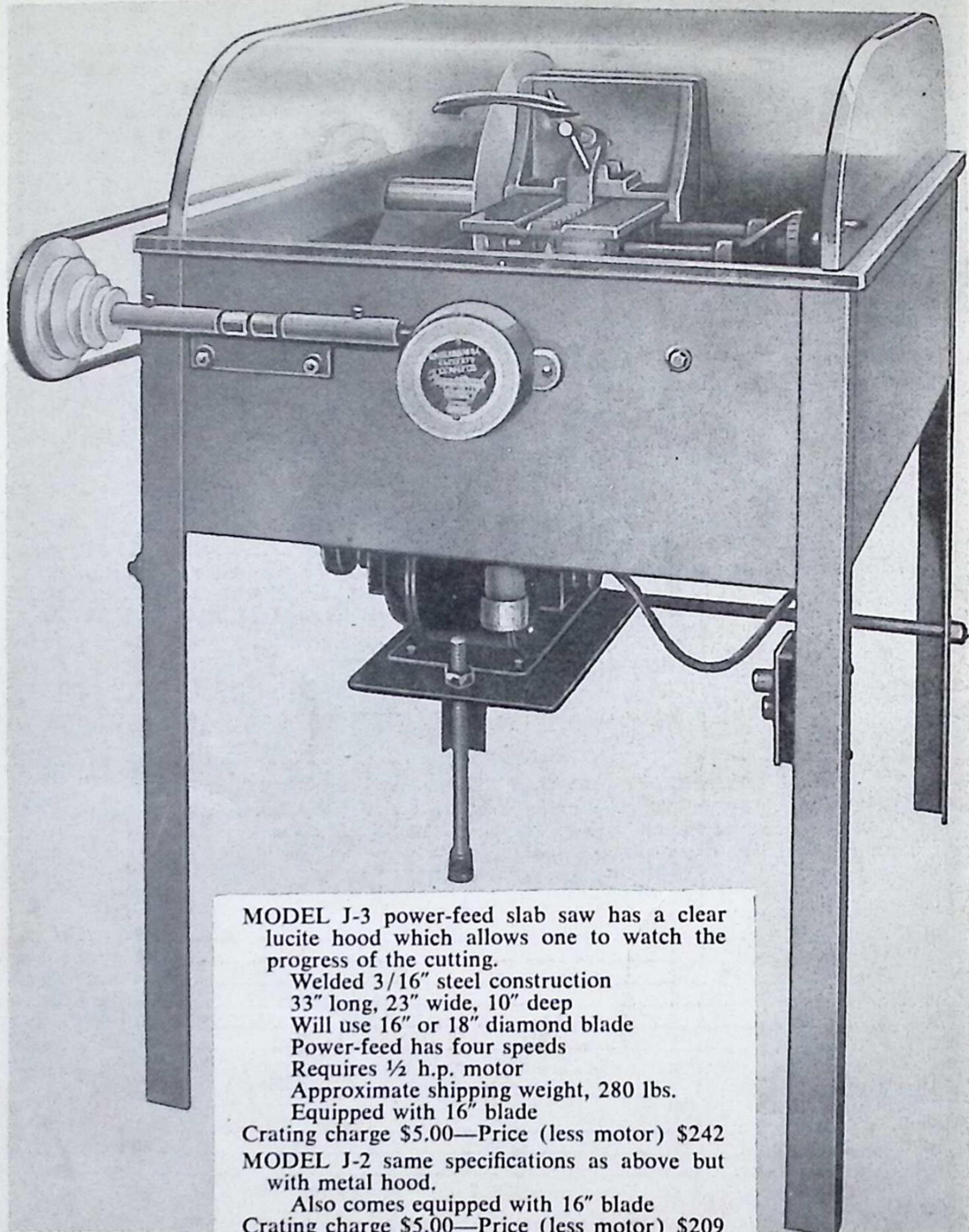
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