

# KENTUCKY CAMP CHRONICLE



Newsletter of the Friends of Kentucky Camp

June 1999

## P.I.T. an International Success!

By M.M. Farrell

Hailing from Tucson and Tombstone, from southern Arizona and northern Arizona, from Texas, New Mexico, and California, from as far away as Idaho, Washington, Oregon, New York, and Vermont, and even from Hermosillo, Mexico, over 50 volunteers converged on Kentucky Camp between April 19 and 24 for our first international Passport in Time (PIT) project. This was also our largest PIT project to date, and even the most extroverted folks may have felt slight trepidations when they first saw the sea of tents and vehicles at our normally quiet site.

But productivity arose from the pandemonium, in large part thanks to Friends of Kentucky Camp who served as project leaders and logistics coordinators. Each day the volunteers organized themselves into small work groups. Some helped build forms, pour cement, and install the new vault toilet and water line. Adobe workers patched cabin exteriors, capped the eroded barn ruins, and added a sacrificial coat to a severely wind-blasted cabin wall.

*Continued on page 2*





Bill Gillespie, Nancy Buell, and Betty Leavengood analyzing artifacts at the Boston Gulch site.

Wielding picks and shovels and pulaskis, trail-builders constructed a new interpretive route to the Boston Gulch hydraulic pits, and repaired sections of the Arizona Trail. One archaeological team analyzed artifact patterns and completed mapping at the Boston Gulch miners' camp site; another archaeological team investigated

a small trash dump found in the backhoe trench excavated for the new water line; a third solved the mystery of the underground cistern and drainage system.

Brave wood workers ripped up the rotted boards in the Office hall, enduring dust, splinters, and hanta hazards to replace disintegrated joists and rebuild the floor. Others cleaned, sanded, and patched mop boards, leveled crooked windows, repaired a leaky roof, created a new photo exhibit, or worked on grant proposals. For the future cabin rental, we have two beautiful new bunk beds and the beginning of a hand-braided rag rug. The logistics crew made sure we had tools, solar showers, slide projectors and screens,



Two of the Hallway Heroes, Gordon Pfister and Ed Buell.

tables and chairs, first aid expertise, and food and beverages. Our camera crews caught most everything in still photographs and video.

Our visiting experts from the *Instituto Nacional de Antropologia e Historia* (INAH) focused on three main tasks: repairing the fine interior plaster of Cabin C; cleaning, consolidating, and repairing the fine plaster and paint work in the Office; and fixing structural problems. But they also found time to provide advice and recommendations; to do architectural drawings and sketches; and to give presentations about different phases of restoration work. The Arizona Daily Star featured two stories on the project, and the new Warner Brothers television station WB58 produced a short segment that has aired several times.



Dick Pettigrew mapping the Boston Gulch site.

This is a special issue of the *Kentucky Camp Chronicle* dedicated to the PIT and FKC volunteers, who not only accomplished a tremendous amount of work, but also miraculously maintained their enthusiasm and energy in spite of noisy winds that made a good night's sleep impossible. Photographs are courtesy of Mark and Sandy Doumas and the photography crew led by Candy Shoemaker. Notes about the adobe work were compiled by Jim Britton, and reports about the paint analysis and restoration work were contributed by our INAH partners. We will return to our regular format in the August issue, which will feature Lew Orrell's history column, the conclusion of our series comparing the Santa Rita Water and Mining Company with the Exposed Reef Mining Company, and an update about the cabin rental program.



## QUICKER THICKER MUD

*By Jim Britton and Mary Farrell*

New techniques of adobe stabilization were introduced to Friends of Kentucky Camp and Passport in Time volunteers during the 1999 PIT Program, thanks to the participation of Martha Robles, Jesus Robles, and Jesus Esteban Romero from the Instituto Nacional de Antropología e Historia. INAH prefers more local source material, mixes their patching mix much wetter, and applies it much faster and thicker than what we've traditionally done at Kentucky Camp.

First, Architect Martha Robles preferred to find a soil source on site that can be used "as-is," without adding sand. This was probably what the original builders did: it's much easier and cheaper to use local dirt than to transport dirt from elsewhere. Plus, while excavating the soil to make the bricks, they could have leveled the slope to make better building platforms. There's an additional possible advantage: as David Yubeta, the adobe preservation expert from Tumacacori has pointed out, the best sand for adobe is angular, and sand that has weathered in place may be more angular than sand that has become waterworn as it was transported and sorted in streambeds.

In the preservation work at Kentucky Camp, we have avoided using local dirt, for two reasons. For one thing, the dirt currently at the surface



Applying the sacrificial coat.

often appears redder than that used in the bricks. This may reflect small-scale, local variations in soil color; perhaps the topsoil removed from the surface 100 years ago was darker than the underlying clays, now exposed at the surface by the original builders' excavation work. Billee and Frank Hoornbeek spent many hours and miles finding a source for dirt that would best match the existing bricks, in color and texture. For another thing, we have been hesitant to excavate very near the site because we have not wanted to alter the historical topography. These factors were not as critical in the 1999 work. The local dirt was acquired from the area already disturbed by the vault toilet and water line excavations, and a color match is not necessary in a sacrificial coat, where color differences will alert us when the coat has worn off.

In the second major difference between INAH's techniques and ours, INAH mixes patching mud much wetter. At Kentucky Camp, we've usually used mud with a low water content, on the theory that it provides less shrinkage (cracking) and a stronger dried product. One possible explanation of INAH's success using very wet mud is that as the drier original adobe absorbs the moisture from the mud it may also pull into the existing wall very fine clay particles. As these clay particles dry, they form the cohesive structure that gives clay its strong bond. The wet mud does crack more than we're used to, but the INAH folks were not very concerned by this for the first



Note the small stones set in the wet mud to anchor the next layer.

layers of the sacrificial coat: the next coat is also applied "soupy" and tends to fill the cracks. For the final coat, the drying is monitored and cracks are repaired, to preclude water penetration.

Third, quick, thick application: The mud was thrown onto the wall surface with a trowel, up to 4 cm thick. Previously, at Kentucky Camp we'd been taught to apply several thin (~5 to 10mm) applications instead of one or two thick (~20 to 40mm) applications.

Why the difference? Martha does not dismiss the value of thin coats where the look of the wall must be preserved, or where the erosion is not severe. However, she recommends thick coats for very badly eroded areas, where one decides to do a "sacrificial coat." Putting on a sacrificial coat is not an easy decision: designed to protect the original wall surface from further erosion, it also hides it from view. Sacrificial coats are most useful where erosion cannot be stopped. For example, we've used them before on the barn ruin, to slow erosion of the original walls. At our cabin, the primary cause of erosion is wind, not rain. The sacrificial coat will protect the original wall from further erosion.

### Martha's Mud-Mixing Methods

Here's a test INAH architect Martha Robles used to determine whether a patching mix had the proper moisture content:

1. Throw a ball of mud against a flat surface such as the side of the wheelbarrow.
2. Pull the material off the wheelbarrow side. If it comes off clean and leaves little or no residue on the wheelbarrow, it is too dry.
3. When mud is too wet don't just throw in more dirt and mix -- sprinkle a handful of dirt on top and let it set until it absorbs moisture and turns coffee color, then mix it in.

## Interior Plastering Steps

by Jim Britton, based on observations he made of the INAH team

1. Use a metal cement trowel to remove the loose edges along cracks. Jesus hit the trowel along the crack, chipping off the edges to a point that the plaster remaining on the wall was very solid. He also scraped the loose plaster melt cascading down the wall from erosion above.



Martha Robles preparing crack for repair.

2. Use a brush (foxtail type) on entire wall to remove any dust.
3. Moisten wall to be repaired with a spray bottle of water.
4. Throw on "soupy" mud with a flip of the trowel covering only the area to be repaired. They attempted to save any original plaster that was approximately 12 inches or wider.
5. Use a long wooden trowel to smooth mud and to remove excess height of mud down to or slightly below level of original plaster. If you are not going to plaster over original plaster you would want to end up slightly below original height so that the final fine coat can fill in and equal the height of the original plaster.
6. To fill deep cracks or voids, throw some mud into void and press or tap chunks of solid (not breakable by finger-thumb pressure) adobe into mud, repeat process until void is filled. The larger the void, the larger the chunks should be.



7. At window or door edge (face boards should be removed) use the wood as a guide for plaster height.

8. Let rough (first) coat completely dry, usually overnight. It should be dry so that all cracking is complete before applying final coat. The drying process created cracks that were hairline to 2mm wide.



Jesus Robles and Jesus Romero add new bricks to re-bond walls of cabin at eroded corner.

During the work, it became evident that the south wall was no longer interlocked or bonded to the west wall. Martha decided that these walls should be rebonded, or tied together. To do this they removed several original broken bricks in two spots at this corner (Martha explained, through Carlos, that "sometimes you must remove or destroy some original material in order to save the life of the structure"). They removed the corner bricks of courses 8, 9, 18, 19, and 20. New bricks were used in an interlocking manner to bond the walls.

Then the final coat, the fine plaster:

9. Screen dirt for final coat through window screen or finer mesh, combine with water and mix to the same soupy consistency as the rough coat.

10. Moisten the wall by spraying with a spray bottle.

11. Use a metal rectangular cement trowel to apply the mud with a sweeping upward stroke.

12. The sharp trowel edge is used to even plaster height next to existing original plaster.

13. Let the fine plaster dry a little before using a sponge float (with small porous holes).

14. Dip float in water and rub plaster in a sort of circular motion.

15. Let floated surface set for awhile and then refloat again with same float and motion. This was done to bring the small fine particles to the surface.

## PIT MUD-SLINGERS

Jim Britton and Susan Jones supervised up to seven volunteers a day during the PIT project in an energetic "mud slinging" campaign. Besides working on the sacrificial coat, discussed above, these volunteers patched cracks, filled holes, and repaired basal erosion. They applied mud and bricks over the bedroom window to keep water runoff from going inside the building. The crew also capped sections of the north and west walls of the barn to repair a crack and hold the wall together, and recorded the major crack above the cabin bedroom door before the INAH team worked on it.

A testimony to the devotion, endurance, and creativity of the PIT and FKC volunteers this year: this was the first project where many mud-slingers voluntarily returned day after day!



KC Whiteley, Dinah Yessne, and C. Charnley patching walls.

## PAINT ANALYSIS

by Javier Vazquez Negrete, INAH

*[During their preliminary visit in March, Martha Robles and Rodolfo del Castillo's collected tiny samples of paint from the decorated walls in the Headquarters Building to determine the paint's original composition. Javier Vazquez Negrete, of INAH's Mexico City's office, produced the following report. It has been translated from the Spanish and edited by Mary Farrell, who takes responsibility for introducing any errors.]*

### Introduction

Incorporating the results of the scientific investigation in the current and future conservation of the wall decoration at Kentucky Camp is of great importance, since the study of the chemical characteristics of the paint constituents permits us to have a clear knowledge of its current stability and degree of deterioration. Likewise, knowing the characteristics of these materials allows us to have a deeper understanding of the original techniques used.

The analysis can serve as guide to select methods and materials most effective for the conservation work, so that the restored paint will be more durable and have fewer undesired side effects.

### Experimental Method

The samples were collected by Rodolfo del Castillo, who scraped small flakes of loose paint into separate, numbered, collection bags. The samples were prepared for analysis by INAH conservator Haydee Orea. The four samples were each only approximately 3 mm<sup>2</sup>, and included the blue, white, ocher, and yellow colors of the two painted rooms in the Headquarters/Office building.

The samples taken were purposefully very small, so that the disturbance to the existing wall paint would be minimal. The small size limits the extent of analysis, but each sample was tested micro-chemically with specific reagents to determine its constituents, and the transverse sections were studied to determine the sequence of application. At least three tests were made on each sample to eliminate the effects of experimental errors and errors of interpretation.

The samples were also tested for proteins, rubbers, drying oils, resins, and synthetic polymers;

these substances are often added to paint as agglutinates, to make the pigment cohere.

### Results

For samples 1, 2, and 3, the analysis for agglutinates showed negative for rubbers, drying oils, resins and wax. The pigments were agglutinated with lime. In sample 3, a synthetic polymer was identified, which showed the characteristics of polyvinyl acetate. The analysis of sample 4 showed positive results for proteins and rubbers.

Sample 1, blue, tested positive for copper, carbonates, and calcium; the pigments present are azurite blended with calcium carbonate.

Sample 2, white, tested positive for calcium and carbonates; the present pigment is calcium carbonate.

Sample 3, ocher, tested positive for iron, calcium and carbonates; the pigments present are ocher with small quantities of hematite and blended with calcium carbonate.

Sample 4, yellow, tested positive for cobalt, calcium and carbonates; the present pigments are cobalt yellow (aureolin) and small quantities of calcium carbonate.

From top (visible layer) to bottom (beneath), the stratigraphy is:

1. Layer of paint (colors are underlain by white, showing the entire wall was whitewashed before the colored pigments were applied).
2. Fine plaster, of calcium carbonate without sand.
3. Rougher earth layer.

### Conclusions

The analysis indicates that the pigments were agglutinated with lime (calcium carbonate). The presence of a synthetic polymer in sample 3 suggests that some repainting was attempted, probably when the building was occupied. The pigments used for the decoration include: azurite, ocher, calcium carbonate, and cobalt yellow.

The cobalt yellow pigment, also well-known as aureolin, was developed in 1848 by N.W. Fisher, which indicates that the decoration was created after that date.

— JAVIER VAZQUEZ NEGRETE, Mexico, D.F.  
a 16 de abril de 1999

## Repairing the Painted Walls

by Rodolfo del Castillo, as noted & translated by M. Farrell

To determine the best methods to repair and stabilize the painted walls, conservators Rodolfo del Castillo and Jorge Morales conducted tests at the INAH lab in Hermosillo. First they fabricated plaster test tiles from dirt samples Rodolfo and Martha Robles had collected during their March trip, to determine which dirt in the area produced the best color and texture match and the least cracking. Using the results of the paint analysis (summarized above), they replicated the original paint recipes and tried different dilutions on the plaster tiles. (The test palette that Rodolfo

and Jorge developed is now on display in the Headquarters Building.)

With these results, the INAH conservators developed a plan to repair the painted walls. Rodolfo and Jorge supervised their PIT crew and architecture students from the University of Sonora in the following steps:

1. *Cleaning of the surface.* This involved using small delicate painters' spatulas to very carefully remove mud that had run down from above to cover the painted surface, as well as the brushing of loose dirt from cracks and eroded areas.

2. *Consolidation of the fine earth plaster layer.* Where the original earth plaster had eroded away, finely screened mud plaster was carefully applied to restore the original surface plane. In many cases, the eroded areas were too small to use regular masonry trowels or to "throw" the plaster, so painters' trowels and spatulas were used to apply the plaster, and a polishing stone was used to burnish the edges and blend the new with the old. In some areas, the original mud plaster appeared too weak to be repaired; in these areas, a dilute lime mixture was applied to strengthen the surface before the final earthen



Verla Peter, Susan Jones, and KC Whiteley cleaning eroded mud off the painted surface.

plaster was applied.

3. *Restitution of the lime plaster and whitewash,* where necessary. Pre-slaked lime for this process was provided by Ray Madril and Gus Martinez of Tumacacori National Historic Park. Pure lime plaster proved to be too white, so a little dirt was added to better match the existing walls, which have turned creamy with 100 years of dirt.

4. *Repainting of the pictorial ornamental layer,* where it was missing. Again, various solutions and dilutions were tested to achieve the best match with existing paints.

5. *Application of protective coat.* This step awaits further tests – one ingredient which may prove useful is derived from prickly pear cactus.



Jorge Morales using a spatula to fill cavities.



C. Charnley fixing eroded areas.





Rodolfo del Castillo using a tool tipped with an agate polishing stone to burnish edges of patch.

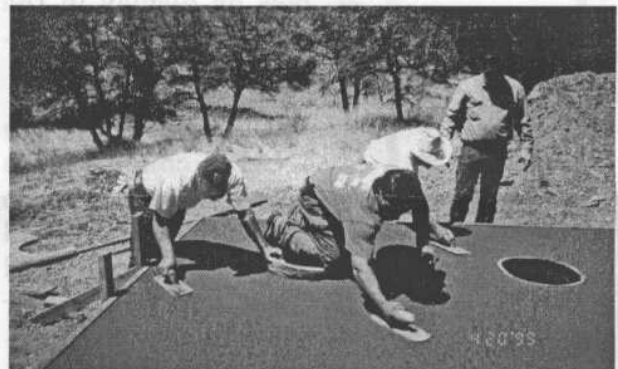


Testing whitewash paint thickness and application.

## TOILET INSTALLED!



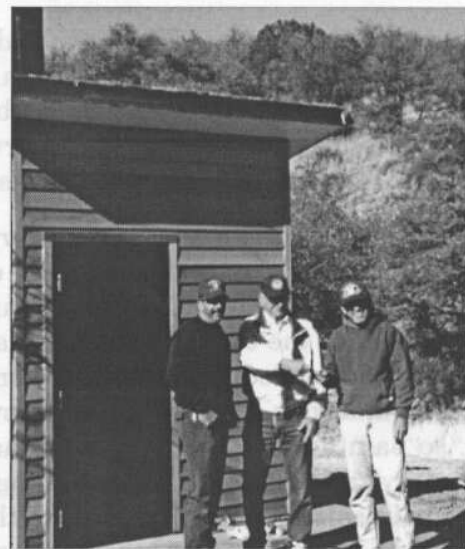
1. Workers stand by as concrete is readied.



2. Floating the pad for the structure.



3. Backhoe prepares to set structure on pad.



4. Don Marion, Dick Pettigrew, and Mark South at official toilet christening.



## Cabin Rental Preparations Accelerated; Raffle Delayed

Have some fun and make some money: come help get "Cabin C" ready for its career as a "Bed and no Breakfast"! At the July 10 and August 14 work days we will fill holes in the walls, repair interior plaster, and do other work necessary to get the cabin ready for inclusion in the Forest Service's "Fee Demo" cabin rental program. No matter what your skill and energy level, your help will be very valuable. Once the cabin is rented, the profits will come back to Kentucky Camp for future maintenance and



Verla Peter leads other PIT Volunteers in beginning a hand-braided rag rug for the Cabin.

restoration projects. The FKC Board has approved the use of up to \$1000 to buy necessary materials. This money will be used as a match to garner an interest-free loan from the Forest Service's Fee Demo fund to complete the preparations.

Meanwhile, our Bed and No Breakfast cabin rental kick-off raffle has been postponed. We have learned that in Arizona non-profit organizations cannot use raffles to raise money during their first 5 years of existence. The rule was developed because in the past unscrupulous individuals sometimes incorporated as a 501.c3 organization, threw a raffle for some purported good cause, and ran off with the money.

The good news is, the Friends of Kentucky Camp will be 5 years old in March 2000! Many

thanks go to our first president, Billee Hoornbeek, who persevered through mountains of forms and red tape to get us official non-profit status.

## And more thanks:

Friends of Kentucky Camp wish to thank the folks from the Instituto Nacional de Antropologia e Historia who taught us many new restoration techniques and helped make our first international PIT project such a success:

Martha Robles  
Rodolfo del Castillo  
Jorge Morales  
Jesus Robles  
Jesus Romero  
Janeth Angulo  
Luis Cacheux  
Carlos Lugo

We especially appreciate their perseverance in obtaining the passports and permits neces-

sary to volunteer north of the border, and their good humored and patient efforts to communicate with us in spite of the language barrier.



Janeth Angulo working on painted wall.



Architect Martha Robles teaching tortilla-making techniques.

**\*!!SEND IN YOUR DUES!!\***

Remember, June is the time of renewal for all long-term members! Don't miss out on the fun, the excitement, the *Chronicle*, the chance to determine the fate of our organization in your Voting (see below)! If you haven't yet renewed your membership, a renewal form will be included with this newsletter.

**And Yet More Thanks...**

to Jack Glenn, who with dedication and skill has completed his term on the Friends Board of Directors. Jack generously agreed to an extension of his term last year so that the board would have more continuity from year to year. In his role as secretary, Jack has kept meetings on track and kept the notes, correspondence, and legal documents up to date, and impeccably organized the copious files and archives. Both the Forest Service and the Friends of Kentucky Camp sincerely appreciate your dedication and skills, Jack, and we wish you the best in your next adventures!

The Friends of Kentucky Camp  
gratefully acknowledge the generosity of

**Herbert and Olga Heaton**  
and

**Frank L. Spittle**

who have recently made donations toward the restoration of Kentucky Camp.

**HELP WANTED**

Know something about installing underlayment and asphalt tiles? We need a project supervisor to oversee the installation of a temporary protective floor in one room of our future rental cabin. Call Arnold Franks, Mary Farrell, or Kathy Makansi for details.

**VOTE!**

Hurray! We have found candidates for the vacant positions on the Friends of Kentucky Camp Board of Directors. Arlene Franks has graciously agreed to serve at least another year as Treasurer. One of the founding members of the Friends and chief assistant to our long-term caretaker Arnold Franks, Arlene has presided over the budget as it increased in size and complexity. Sandy Doumas has volunteered to serve as Secretary. You may have seen Sandy at work days and the April PIT project, or serving as KC caretaker with her family. Show your support and appreciation for their kind offers by sending in your ballot with your dues.



Bunny Pfister and Fred "Pete" Peter recovering historic artifacts along the trench excavation during PIT project.

**WELCOME, BERNIE!**

Bernie Taps has come from Sarasota, Florida, to do a stint as KC PIT Caretaker. The isolation and hard work involved are not new to him: he has served as site host at the Garnet ghost town in Montana, and at the Mountain View Campground in Wyoming. At Garnet, located at 9,000 feet elevation and 50 miles from the nearest grocery store, Bernie restored log cabins – relatively easy work for a former B17 pilot who flew 87 combat missions during World War II! Bernie's scheduled to stay in the smaller trailer through Labor Day – come by and welcome him to Kentucky Camp.

## MARK YOUR CALENDARS!

The next work days are July 10 and August 14, 1999. There will be all kinds of fun chores to choose from, including:

- ☞ help fetch material for and make patching material
- ☞ practice interior plastering
- ☞ fix holes in cabin walls
- ☞ add bricks atop walls below eaves to keep weather and critters out
- ☞ finish "sacrificial coat"
- ☞ plus many other important activities



*The Friends of Kentucky Camp, a chapter of the Coronado National Forest Heritage Society, is a non-profit organization established to help in the preservation and interpretation of Kentucky Camp. Friends sponsor work days, coordinate volunteer activities, and conduct and supervise stabilization and preservation, in cooperation with the Coronado National Forest. Student (\$5), individual (\$10), family (\$15), contributing (\$25), supporting (\$50), and lifetime (\$200) memberships are available. Send checks to Friends of Kentucky Camp, 716 Calle Rita, Tucson, AZ 85706.*

*President: Don Fisher (520) 722-9224*

*Vice-President: Betty Leavengood (520) 885-3570*

*Secretary: see ballot*

*Treasurer: Arlene Franks (520) 294-9783*

*Director at Large: Arnold Franks (520) 294-9783*

*Forest Service Liaison: Kathy Makansi (520) 670-4522*

*Forest PIT Coordinator: Mary Farrell (520) 670-4564*

*Nogales Ranger District Contact: Mark South (520) 670-5496*

*Visit Kentucky Camp on the internet at <http://www.Azstarnet.com/public/nonprofit/coronado/Intro.htm>.*

*See past issues of the Kentucky Camp Chronicle (in color!) at <http://www.azstarnet.com/~patish/chrondx.htm>. Contributions to the newsletter are welcome; send to Mary Farrell, Coronado National Forest, 300 W. Congress St., Tucson, AZ 85701*



PIT volunteers enjoy a "history moment" hiking with Betty Leavengood along the Arizona Trail.



Martha Robles advises Bill Gillespie on tortilla stretching techniques.

## WELCOME NEW FRIENDS!

Charlotte Cardon

Ingrid Downey-Cardon

Bill Lord

Glenn Peter

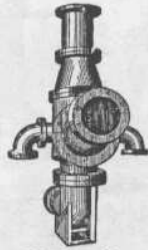
Bernie Taps

KC Whiteley

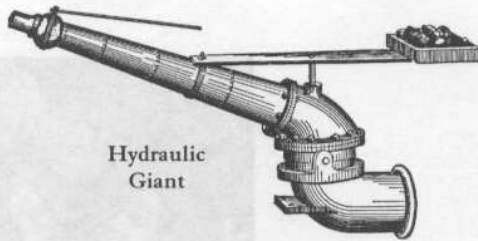


# SANTA RITA WATER & MINING COMPANY

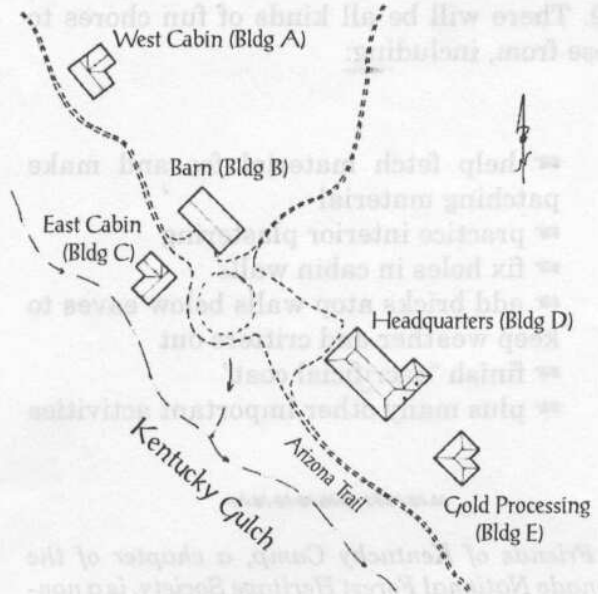
## KENTUCKY CAMP, ARIZONA



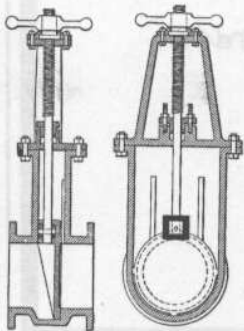
Hydraulic  
Elevator



Hydraulic  
Giant



Coronado National Forest  
Supervisor's Office  
300 W. Congress St.  
Tucson, Arizona 85701



Water Gate

Pete and Judy Van Cleve  
4858 S. Whitewing Rd.  
Sierra Vista, Arizona 85635