

## Survival Insurance:

# C A C H I N G

Ensure a continuing supply of essentials in remote areas . . .

By Lt. Bill Johnson, Australian Army Reserve

PHOTOS BY W.V. REVILL

When burying a cache, get the job done rapidly. Avoid hollow logs and abandoned mine shafts as they're obvious and attractive. Which of the two cachers is camouflaged? The man in the military garb may appear weird and dangerous, but the man in "civvies" seems to be a low-profile hunter.



**B**E HONEST. HOW long could you last on your own out there in the back country? No supermarkets. No Big Macs. Just you and a thousand grid squares. Chances are, not much more than a month.

But there is a way to stretch this out. And now's the time to get started—before the pressure comes on. It's all very well rushing about trying to put some sort of survival act together after the crunch comes, but by then it may be too late.

Assuming you've already decided which piece of terrain you'll claim as your own when the world turns septic, you're still faced with the problem of staying alive. Naturally, a large part of the answer is ensuring a continuing supply of essential stores, most of which won't otherwise be available—or reliable—in remote areas.

What you need is extra insurance: your own private stockpiles, hidden away at predetermined sites. Stores.

Supplies. Call them what you like. Most often they're referred to as "caches."

Sound simple enough? Perhaps there's more to it than one might at first think.

**Know Your AO**—The first job you have is getting to know the terrain you've chosen—your Area of Operations, AO. And that means *really* know it: hills and valleys; rivers; roads and tracks; even the weather patterns. Everything.

Sure, that will take time. Maybe even a year or two. But the advantage you'll gain over potential opponents will pay off enormously.

If you don't already know the area reasonably well, start by studying a few topo maps. Get the general lay of the land firm in your mind. Where's the highest ground? Which way do the streams flow? Tracks? Roads? Any other man-made features?

For a piece of real estate say 25 miles by 25 miles—the minimum AO recommended—this shouldn't be too difficult.

At the same time, get out there as often as you can. A 4x4 is ideal during these early days. Get to know the main roads, the minor roads, the tracks and finally, the more obscure 4WD trails. Study natural features, vegetation, soil patterns. The lot. And that includes "civilian" activity: popular campsites, fishing spots, weekenders, logging or mining operations, that sort of thing.

Gradually you'll need to become independent of your motor vehicle. Start backpacking. It's the only way to see your AO in detail—particularly the areas not serviced by roads or tracks. Of course, map and compass are a must at this stage.

Some of the features you'll need to record are obvious: campsites, water-points, natural hides, terrain varieties,

"civilian" movements, etc. But jot down the coordinates of the not-so-obvious also: possible observation positions (OP), dead ground, obstacles, or possible helicopter landing zones (LZ).

After a few weekends on the ground, you'll really start to feel at home, so eventually you should carefully dispose of any notes you've made. Start using and developing your memory and instincts. Maybe even travel without relying on map or compass. But take them along just in case!

Here are two more invaluable aids: (1) Make a detailed, fairly accurate 3-D model of your AO (in sand or mud). Ideally it should be about 6 feet square and show high country, rivers, tracks, etc., all in relative scale. Models like this are the best way known to imprint the AO on your brain. (2) Try to arrange an aerial recon over your AO, by chopper if possible. You'll see all sorts of things you missed on the ground. But for maximum value, don't do this until you know the area well so you can quickly relate to landmarks as you pass overhead.

Finally, one thing to keep in mind right from day one: *security*. It's most likely that somewhere out there you'll come across "civilians." So what? Sure, it's best to avoid them, but if you can't, just act normal. Dress, talk and act like the person you're supposed to be—hunter, prospector, naturalist, whatever. But don't get all cammied up and start skulking about and acting weird. Keep it low-key and casual. People are quick to remember the strange or unusual. Besides, you can often pick their brains for local knowledge, like where they spend their time, or other handy info.

It's your AO. Get to know it. Intimately. It's far better to know 500 square miles well, than have a passing acquaintance with 1,000 square miles. Become part of *your* territory, then become reasonably familiar with a 10-mile "buffer zone" all around—just as a bonus.

**Cache Sites**—By now the purpose of all this homework on your AO should be obvious. If you want to establish a cache of vital supplies, you'll need to be very careful where you plant it. You don't want to come back 6 months later to find a bunch of Boy Scouts camped on top of it.

But by this time you'll know that piece of country better than any man alive, so selection of cache sites should not be a problem. And at the outset, you'll need at least six: three *primary* sites and three *alternatives*.

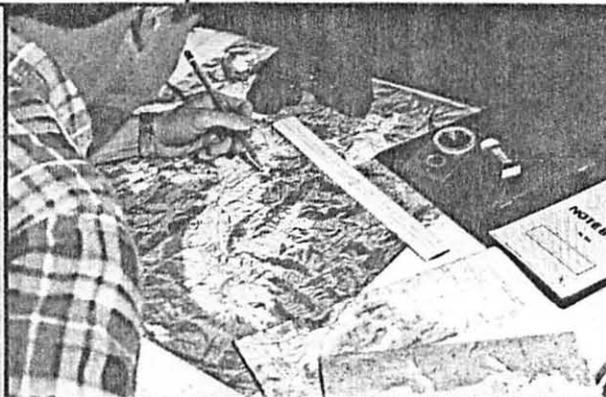
It's the old hunter's principle of hedging bets: if one cache is good insurance, three must be better. And if each cache will sustain you for, say, 30 days or more, that's at least three months you can continue to operate.

First up, before you determine the exact location of your cache sites, you will need to look for *reference points*. These should be—to you—easily recognizable natural features in remote corners of your AO, and well away from any base camp or retreat you may have established. Huge trees or rocks, creek junctions: anything that

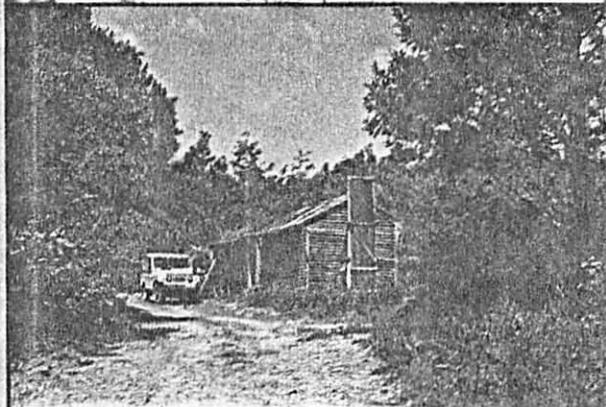


An ex-military backpack to hold 30 days worth of survival supplies is ideal for caching. Supplemented by AO's resources, 30-day consumption period can be doubled.

Study relevant topos in order to know your area of operations (AO).



Keep away from popular attractions: abandoned dwellings, campsites, ruins, etc. Memorize their location. If possible, use a 4x4 to conduct initial explorations.



The high ground offers observation posts (OPs) from which you can scout a possible adversary—and vice versa. Know where OPs are located.





Here's the cache, wrapped, sealed and ready for planting. Firmly embedded twigs can provide indication of tampering.

will still be there a year or two later will be suitable. And if you're working in snow country, choose reference points that you can still find when there's 3 feet of snow all over! Or when it's dark.

Remember: all you have so far is a reference point (not a cache site). If you really have to, note the coordinates. But *don't* mark your map. Eventually you have to memorize these locations without the need for map or compass.

Next step: from the reference point, the *cache site* is plotted using your own standard formula. For example: 30 paces due north, then 50 paces due east. Use two or three, *unchangeable* legs to pinpoint the site where your cache will be planted. Then, when you're standing at that spot, decide if the position is suitable. If it's

not, find another reference point and start over. Do *not* vary your siting formula.

In deciding on the suitability of a site, you'll need to consider things such as drainage, natural cover, soil type, if burying is necessary, and the presence of any nearby "attractions," such as campsites, hollow logs or mine shafts, that could eventually lead to compromise of the cache.

But do this assessment and make your decision quickly. Don't spend too much time crashing about in an area that may soon be hiding 30 days of your life! If the site looks good, and there's no problem finding the reference point again later, get out of the area.

So for each cache you're planning, you'll need to go through the same procedure. This usually means at least six times before you actually plant your caches. That way you can plant your first, followed a month or two later by the second, then later again, number three, and so on. By the time the third is in position, the first will most likely have been out four or five months. This—depending on the contents—might be time to retrieve it and check it out for deterioration.

After the first cache has been checked/replenished/repaid, out it goes again—to the *first of your alternative sites*. This is important: no site should ever be used more than once.

That's the drill. A cache goes out until the contents are at the limit of their storage life. It's then retrieved for examination, and finally replanted at a new site for another stretch. It's a continuous process: site selection, planting, retrieval, checking and replanting.

**Movement/Security**—The need for security during all phases of a cache program cannot be overstated. But during the early stages, when there's no operational pressure, security is often overlooked. And it's your own movement through the AO that presents the chief problem.

Always assume that you're being observed. Stay within that narrow interface between caution and carefree so you can get about without raising suspicions or unnecessary attention.

Obviously the two most critical stages are planting the cache, and the pickup some months later.

When planting, move beyond and around the site in a broad "clearing



Cans, knives, metal objects, clips, etc., should receive a light coating of oil or rust-proofing compound.



Plastic containers, Ziploc bags, tape, rubber bands and metal canisters make storage airtight and moisture resistant.



Don't forget solid fuel, rope, water purifiers, dressings, vitamins, socks, first-aid and survival kits, ammo, toilet paper, underwear, space blankets, string, fishing gear, can opener, toothbrush, soap, matches, candle, foot powder, folding stove and gun oil. You'll need 'em.

patrol" action before making the drop. Then, after circling back to the site, make the plant and extract yourself as rapidly, but cautiously, as possible.

Similarly, when moving in for a pickup, clear the area first in a wide "fish hook" sweep. Avoid walking directly toward the site. If there's high ground overlooking, clear that first. (It might even make a handy OP to watch for "intruders" before moving in.) After pickup, move out quickly by the shortest possible route.

If additional security is needed during the final stages of planting or pickup, a camo jacket can be quickly slipped on over your usual civilian clothing.

An added precaution: develop some small, definite trigger to clearly indicate whether the cache has been tampered with. For example, in the type of cache to be described farther along in this article, a small stick, firmly lodged under the outer cover, gives immediate indication of compromise. If that's the case, grab it and run! You've gone that far, you might as well take the goodies.

Of course, if the cache is gone, get out fast. Don't start scratching about for it. That just makes it obvious who the owner is.

In terrain where there's insufficient undergrowth, burying the cache may be the only alternative. This means more time at the site, with increased chance of compromise. You might have to plant at night. Whatever method you choose to hide the cache, plan in advance—even rehearse—to minimize the time at site.

In all your movements, think *security*: avoid patterns or predictability in your routine; make stops at irregular times; keep off tracks and roads; don't take the "easy path" all the time. Above all, leave no sign of your passing.

**Preservation**—Well, just what sort of things are you going to store in your cache? The secret is remembering the primary aim of any cache program: to replenish supplies essential to sustain life and thus allow continuation of operations.

This raises another question: what is "essential to sustain life?" The three basics: *water*, *food* and *shelter*. What your AO can't provide in sufficient quantity, your cache must.

Obviously, beyond the essentials there are a few "desirables" to con-

sider. These are items which provide *warmth*, *self-preservation* and *protection*.

Let's look at some examples:

**Water:** Water (difficult to store), water purifiers.

**Food:** Basic meals (freeze-dried, dehydrated or canned); meal supplements (soup, rice, macaroni, flour, salt, sugar, coffee, tea, biscuits, fruit, vegetables); fishing line and hooks.

**Shelter:** Basic shelter (e.g., poncho or space blanket); twine/rope.

**Warmth:** Matches, fire starters, solid fuel, candles.

**Self-Preservation:** Hygiene kit (soap, toothbrush, toilet paper); first aid kit (pocket size); survival kit (pocket size); multi-vitamins; spare socks and underwear (one set).

facturers' claims. It's not uncommon to find products still perfectly edible after twice the "recommended" storage period—or putrid after less than half! The only way to find out is cook and eat it yourself. Discard anything that smells, tastes or even looks suspect. You may err, but it's better to come down with a dose of "bushman's three-step" in the relative safety of your home, rather than when you're alone in the back blocks with a rabid bunch of unfriendlies close by.

Cans and other metal components should be given a light coating of oil, with all other items—waterproof or not—stored in plastic bags. Other storage methods to try are screw-top cans, garbage bags, jars and plastic containers of all types. Build up a collec-

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## Obviously, the two most critical stages are planting the cache, and the pickup . . .

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**Protection:** Ammunition, knife, gun oil.

Whether you add any extras—such as clothing or footwear—will depend on your own operational circumstances. Of course, how bulky your cache is depends on how long you want it to extend your "operations" after pickup. One month is ideal. In fact, all one person needs for 30 days (or more) can be packed into the average backpack. And that's how it should be planted: in the pack.

By using a properly adjusted, protectively treated backpack (Army surplus is ideal), pickups will take less than a minute or two, excepting buried caches. By going in carrying basic gear only, it's simply a matter of grabbing the cache, removing any outer protection, followed by speedy extraction. And if some Boy Scout stumbles across it, more than likely he'll think it's been left (or lost) by some back-packer off exploring or rock climbing.

As for the food, freeze-dried stores longer and packs easier than most other types. Depending on the brand, you can expect at least 6 to 12 months life, usually more. A bit of time in your supermarket or outdoor supply center will give you plenty to consider in regard to different long-life foods.

But the trick is in testing items for yourself. Trial and error is your best guide to storage life, not the manu-

tion of them for testing during the early days of your program. Airtight seals can be achieved by taping, spray painting, adhesives or even the lowly rubber band. All this can be tested at home, long before your first cache goes out.

After it's been out a few months, check the cache and contents for deterioration. Repair, replace, repaint, replenish—whatever it needs. Get it ready, ASAP, to go out again. If things suddenly turn nasty, you don't want to be caught with only two caches in the field.

One final consideration: if your operations look as though they will extend beyond 12 months, plan for a one-off, long-life cache of non-perishables such as boots, clothing, hardware and other key items. Try to keep it to backpackable size for easy extraction when the time comes.

To restate the rule: if you can live and operate without it, leave it out.

There you have it. You won't get it together overnight. It needs planning, research, testing and practice—and lots of slogging in the field. This all takes time, but how much do you have?

Who knows? One thing's sure: you can increase your chances out there if you establish—in advance—suitable caches of essential stores. After all, it's your life insurance. ●

## Long-Term Storage:

**A**S survivalists, we understand that a disaster can occur at any time. We also, hopefully, are aware that an emergency situation can deprive us of access to our equipment and supplies that we have set aside.

An earthquake can destroy a home or retreat, a fire could reduce supplies to ashes or evil-wishers could enter your home and relieve you of many necessary

Withdrawing items from a cache tube without moving it from the ground, saving time and energy.



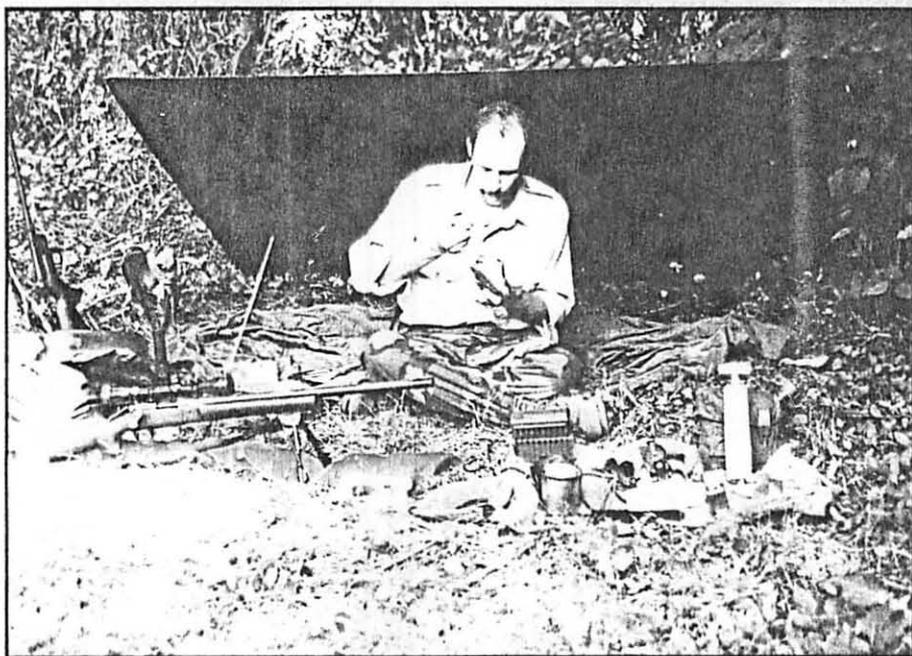
Caching core sighting equipment with a firearm and scope allows you to sight-in the firearm with minimal effort and ammunition.



# Caching

Equipment/supplies secreted away at an undisclosed location to be drawn upon if the need arises...

**BY GEOFFREY HARDIN**



Shelter, food and other items retrieved from a cache can be life saving.

and valuable assets. Afterwards, "benevolent" government officials may decide not to allow you to enter your own home to retrieve your equipment—if any is left.

This could make you reliant on the charity of family, friends, possibly even the government to feed, clothe, shelter and protect you—not necessarily a comforting thought.

Some survivalists opt to secret away some equipment and/or supplies at an undisclosed location to draw upon if the need arises. This is known as caching. More people are opting to bury their caches in the ground. An underground cache can be used to store a "72-hour" survival kit in an easily accessible location in case you are unable to get to the equipment kept in the car or at home, or as a hidden vault to hide valuables from those who wish to deprive you of them.

Whatever the reason behind the decision to cache, the costs incurred by some of the methods can run quite high. This high cost could cause some budget-conscious survivalists to either not cache or improperly cache equipment. Improper caching could render equipment unusable or worse, dangerous. The following are some inexpensive methods which can



An example of what can be stored in an underground cache.

be used to effectively prepare items for a 3-5 year cache. They are not the only methods, but I have used them personally to protect items I keep in numerous caches. These methods can also be used for other long-term storage applications.

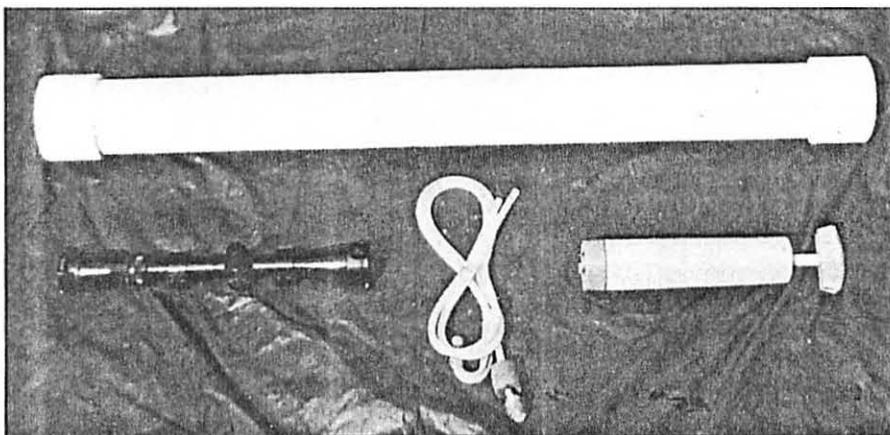
The requirements for a cache container are that it must be air tight, water tight, close securely and be solidly built. For example, a plastic 55-gallon drum can be used as a cache container. Some people make a shell of concrete in which to store their items. I know of one individual who uses thick steel vaults he welds together himself and coats heavily with tar. Being a talented welder who lives in a rural area, he is able to make these vaults himself without drawing attention. The lockable plastic storage boxes made by manufacturers such as Rubbermaid can be used if they can be rendered water tight. Unfortunately, containers such as 55-gallon drums or concrete "shells" may prove difficult to make or haul around for the survivalist who lives in an apartment in the middle of a city and drives a small car. If your cache will be buried in the ground, the size and shape of the container will be major factors. A large, box will be difficult and time consuming to bury, not to mention retrieve in an emergency. A long, tube-shaped container is what will be needed. There are some containers which can be purchased already made such as the military surplus sonar buoy storage tubes, but for underground caches, few containers can rival the properties of PVC (short for polyvinyl chloride) piping. PVC pipe is usually used for plumbing or sewer piping which makes it perfect for caching purposes. Not only is it water and air tight, it is also relatively common and should not draw attention from others. A little misdirection can

turn nosy querents away by stating that you are simply making map cases, fishing rod holders or some such.

PVC piping comes in several diameters and wall thicknesses. While Schedule 40 PVC is extremely durable, it is also expensive. The SDR-35 class of PVC is more than serviceable for caching and cuts the cost of a cache tube by over 60 percent. An 8-inch diameter pipe 6 feet long offering almost 1800 cubic inches of storage space can be made for around \$40. If you don't know where to obtain PVC, contact the nearest plumber.

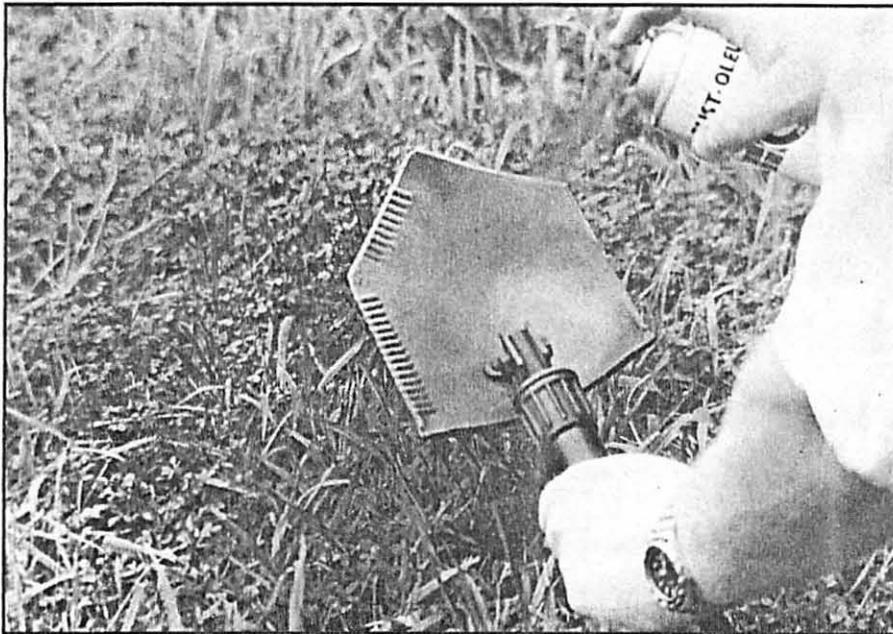
I suggest using the 8-inch diameter pipe cut to the length which will accept all your supplies. Two end caps will also be needed and can be bought when you get the pipe. Glue one end cap onto the pipe using standard PVC glue. The other end cap should have a handle made of 1-inch diameter PVC piping and can be either "T"-shaped or shaped like an upside-down "U" and glued to the top

**Some items may need a little more protection. Store these items in smaller tubes inside the main cache tube and used newspaper for packing material.**



of the second end cap. This second end cap will be the top end cap and the handle will be greatly appreciated when you retrieve your cache. This top cap will be sealed with silicone or heavy grease. If the top cap were glued on, the entire tube would have to be dug out of the ground and cut off, greatly increasing the amount of time it would take you to retrieve your supplies. If you do use PVC for your cache container, you should wait to assemble it until after you have decided what to include in your cache and prepare the items. You will then have an idea as to how long the tube will have to be to hold all items. If you are using another type of container, the size of the container will dictate what you can and cannot cache and you may be required to use two or more containers or leave larger items out of your cache.

**Clothing**—It is best to cache new, unworn clothing. Worn clothing must be cleaned and dried completely before caching. If possible use clothing with plastic buttons instead of metal zippers which may rust or break and prove difficult to repair in the field. Fold clothes tightly and place in heavyweight Ziploc bags sealed with duct tape for extra security. Rubberized clothing such as rain gear or ponchos need to be coated heavily with talc powder before storage. This will help keep the lamination from sticking to itself during storage but may not always work. Cache a tube of Household Goop (available at most hardware stores) to repair holes or patches of missing lamination. Keep leather items to a minimum, leather does not store well in an environment where air cannot circulate around the item. Where possible, use synthetic items instead of leather. Gloves, belts, holsters, etc., are best cached new while boots are best cached after a short breaking-in period. After a disaster is not the time for new boots. Coat all leather gear with a good preservative such as Sno-Seal, Venetian Creme or similar product. Stay away from preservatives which contain silicone as some claim that it promotes



Spray paint metal items with rust preventative to protect them while in a cache.

drying out of leather. Include a container of preservative in the cache to coat the items after retrieval and before wearing, if possible. Equipment made from nylon, kevlar or other synthetic materials need only to be cleaned before caching. Fasteners or other parts made of metal should be removed, prepared as described below and sealed in Ziploc bags if possible. Keep all items together so you can easily reassemble the equipment. Store the synthetic equipment in Ziploc bags to prevent contamination from metal protectants which can damage some materials.

**Water Purifiers, Canteens**—These are also best cached new and unused. Bacteria thrive in dark, wet places. Use only plastic canteens and soak in a one tablespoon chlorine bleach to one quart water solution and dry completely. Canteen covers are to be prepared within the applicable guidelines set above. Water purifiers cannot be cached if the filter element has been used. If the filter element has been replaced, soak the purifier body and hoses, etc., but not the filter element, in the same chlorine/water solution as above. Allow to dry completely before re-assembling and cache in a smaller tube inside the main cache tube using newspaper to fill in empty space and prevent damage during transit to the cache site. After retrieval, do not drink the first gallon of water through the purifier.

**Electronics**—Radios, walkie talkies, flashlights and other electronic items can be cached by removing batteries after ensuring that the items are in working order. Store these in Ziploc bags sealed with duct tape. For those who are interested, the National Bag Company, Inc. (1-800-247-6000 for free catalog) sells reclos-

able metallic static shielding bags which provide faraday cage protection for extra security. New batteries can be stored in their unopened packaging. Rechargeable batteries and a solar recharger or two can be stored as well, but you will want to cache alkaline batteries to run your electronics until you can charge the empty batteries.

**Food**—I suggest storing only military specification MREs. The method of preparation and quality control that the manufacturers have is excellent. MREs are reported to last over 10 years and maintain their nutritional value, if not their taste. MREs provide you with the calories, vitamins and minerals necessary for an active environment. This could prove

**Rifles ready to be cached. One is wrapped in a garbage bag and sealed with duct tape. Another is placed in a cotton felt sleeve and tied closed, and a third is wrapped in newspaper and duct tape.**



useful in a situation where outside support is impossible or unavailable as it will allow you to concentrate on more important matters for a while. If you have the complete meals, keep them in their brown plastic pouches. If you have the individual pouches, remove the cardboard outer wrapping, write the type of food and date of manufacture (found on the original box, ask when you purchase) with an alcohol marker. Cache food utensils and mess kits made from aluminum, not from stainless steel or iron. Stainless steel is rust and stain resistant, not rust and stain proof. Stainless steel or cookware would require a coating of metal protectant, but you don't want this on your cookware.

**Tools and firearms**—Metal protection should be a priority on anything made from two or more materials such as wood and metal. Wood handles and hardware can be fashioned with little effort if they break or split, whereas metal hardware can be rendered useless with advanced corrosion and may not be repaired so easily in the field, if at all. Protect what you can with a rust-preventative paint such as Rustoleum. Stainless steel equipment or items which have a protective finish need not be painted, but they must be coated with a metal protectant such as Cosmoline or Outer's Gun Grease (painted items need not be coated with metal protectant, as well). Use a thick protectant or one which leaves a protective coating on metal after drying because heat and gravity can cause lighter protectants to run and leave areas on a cached item unprotected. Subsequently, these areas can corrode. Final preparation for these items will be the same as

for firearms, below. Aluminum equipment needs no protectant. Recoat wooden parts with varnish, lacquer or whatever may be appropriate.

When caching firearms, realize that any degradation in a firearm resulting from improper preparation can affect performance or result in a firearm which is dangerous to the user.

**DO NOT CACHE A LOADED FIREARM!** This is a very dangerous place to put a loaded firearm. When you retrieve the cache, you may be required to do a lot of tugging, twisting and pulling to get objects free, any of which can accidentally catch the trigger on another item and may be the last thing you do.

Wear latex gloves during cleaning and preparation of firearms to avoid contaminating the firearm with body oils which can severely corrode metal. Clean firearms thoroughly before caching. When using a bore cleaner, dry the bore completely to ensure there is no cleaner remaining and coat with a metal protectant, instead. Some bore cleaners can eat away at the bore if stored for a long time, resulting in diminished accuracy.

After cleaning, all metal parts should be coated inside and out with a protectant using a paint brush to get into difficult areas. Any screw-on or removable parts should be removed, coated with protectant and re-attached.

Cache a firearm completely assembled if possible. While removing the stock from the action may not be difficult, it would be wiser to pay a few dollars more to construct a cache tube long enough to accept an assembled firearm than to risk losing an irreplaceable part if retrieving the cache in the dark.

An exception to this is if you are caching a rifle which has been "bedded" for accuracy. In this case, the stock should be removed and stored separately from the metal parts using no protectants. Petroleum products will soften the bedding material and affect the fit. Also be aware that, due to the natural shrinkage of the bedding over time, the point of impact will deviate from where it was before caching. A precision rifle retrieved from a cache will not have the same zero.

Once the firearm is coated with protectant, wrap it in a cotton felt sleeve. These sleeves can be purchased at most sporting goods stores or made from materials found at a fabric store. Use plenty of protectant and roll the sleeves up the firearm rather than pulling to avoid inadvertently wiping protectant from the firearm. Butcher paper or newspaper can be used instead, if these cotton sleeves are unavailable. Use at least two layers of paper and saturate the layer in contact with the firearm with metal protectant.



A disassembled handgun is painted with Gun Grease metal protectant prior to storage in a cache.

Secure the paper around the firearm with duct tape, taping over any sharp projections such as the front sight assemblies to prevent tearing. Whether using cloth sleeves or paper, the firearm should then be double-bagged in garbage bags or similar bags and wrapped once again with tape.

Magazines are prepared like firearms by coating all metal parts with a protectant. Modern magazine and recoil springs should not lose their tension if they are stored empty. This is especially true of military-style firearms as they are designed with possible long-term storage in mind. Store magazines in Ziploc bags sealed with duct tape.

**Ammunition**—Ammunition needs very little preparation for caching. I store ammo in plastic boxes that reloaders often use. I usually only do this with the ammo I store in a "72-hour" kit cache. I prefer the ammo which is cached with a firearm to be in a container that won't disintegrate if wet. If you do handle ammunition prior to caching, wear latex gloves. For a cache of ammunition only, include a nylon backpack just large enough to carry all the ammunition in the top of the cache. When you come to retrieve the cache, you won't have to worry about bringing a bag along.

Whenever caching a firearm, include a cleaning kit with extra rags to remove the protectant, a bottle of lubricant, operator's manual and any tools needed for maintenance.

**Optics**—If you intend to cache a scope,

clean the lenses carefully with lens paper and use scope covers for protection. Be aware that body oils from a finger print can etch the scope lens, ruining the scope. The body of the scope should be coated with protectant (after the lens caps are on) and wrapped in newspaper. The scope should then be placed in a smaller tube or container inside the cache tube with all mounts, etc., attached. Cache a Ziploc bag of lens paper, the instruction manual for the scope, the necessary tool to tighten the scope mount, and an inexpensive bore sighter to help sight in the scope with the fewest shots. Cache a rifle butt-down in a cache. A handgun's position is not important.

**Placement Of Equipment In Cache Tube**—One of the most difficult aspects of caching is getting the items out of the tube once it has been buried. If you glued both end caps on, you had best resign yourself to digging the entire tube out of the ground. If you've ever dug up fence posts, you understand how difficult and tiring this can be. To get the contents out, you must cut or chop off one end, turn the container upside down, and dump the contents on the ground. If, however, you seal the top cap with silicone or grease, you should put all of your cached items in sturdy nylon mesh bags. Tie or cinch the bags closed with strong cord and each bag should be tied to another bag. Don't use bags much larger than the tube itself and don't stuff the bags full. The idea is to keep the bags small enough that they can be pulled

(Continued on page 64)

from the tube easily. Place these in the tube so that if you pull one, the next will follow until they are all out of the tube. If caching a long arm, place the long arm in the tube first, then the bags along side.

If, after placing all of your equipment in the tube, you find that you still have some room, use wadded-up newspaper rather than Styrofoam "peanuts" or similar materials to fill in the extra space. This will help lower the possibility of accidental damage to any fragile equipment while in transit. The paper can be used if the cache is retrieved in an emergency for starting fires or for insulation and won't react with petroleum-based protectants.

**Choosing A Cache Site**—Contrary to what some authorities advise, I prefer to place a cache near a recognizable landmark. Choose a cache site which has little human traffic and a distinctive reference point which can be used in the dark, rain and snow. Of course, the best place to put a cache is somewhere you know like the back of your hand. This will relieve you of difficult to remember instructions and the necessity to bring along a map and compass. Decide on a site weeks, or even months, before actually burying the cache to do some long-term surveillance and better familiarize yourself with the area. Don't bury a cache in hunting season for two reasons; you neither want to overlook the presence of a camouflaged hunter, nor do you want to be mistaken for whatever's in season. Plan to begin burial as much as two hours after arrival at the cache site and use this extra time to ensure that you are not being observed. Don't place your cache in or near a body of water or in a low-lying, flood-prone area. Weather is unpredictable and high water can make it difficult to locate and retrieve your cache while low or draining water may accidentally expose your cache. If you live in an area where the temperature gets below freezing, remember that you will have to slip, slide or slosh your way through that cold water to get your cache, if you can locate it.

Stay away from areas with high grass which will become trampled and indicate that someone was there. Also be careful that there are no young trees within five feet of your hole. The roots can complicate retrieval. Don't bury your cache in snowy seasons, the ground will be as hard as rock and you will leave footprints to tell that you were there.

If you are placing your cache in a place that you don't absolutely know like the back of your hand, you must devise a locating method that you won't forget in

an emergency. Remember that you will be under a lot of stress and this will make a complicated locating method even more difficult. For all of my caches, the location method is the same. I don't like using intersection, resection or triangulation because there is no guarantee that I will have maps or compasses available. These methods may also prove useless if that big oak tree you used as a reference point was cut down and the stump removed by a local farmer to expand his field. While there are many methods, I find that this works best for me. First, locate a distinctive intersection, for use as a reference point. This intersection can consist of two roads, a road and a waterway, a creek feeding into a river, or anything which will give you a permanent, easily identified reference. Next, establish a permanent unit of measurement such as arm lengths. This length (hopefully) should not vary considerably over time. I don't like to use pace counts because they can vary greatly, an injury may throw them off or you may have to send others to retrieve your cache for you. Cut a branch, or string or mark something such as a belt with the appropriate length. Using only full units of measurement, no halves or thirds, measure "X" number of lengths up the west side of North Road (for example) to a spot where you must turn west 90 degrees to look at a likely cache spot. Write the number down immediately. Then measure "Y" number of lengths to the spot. Write this number down immediately, as well. Mark this spot with a tent stake or coin and return to your starting point. Repeat this process until you can locate the exact spot every time. This is where you will put your cache. This sounds tedious and time-consuming, it is. But, if you are under a lot of pressure and have little but what's in your pockets or on your back, you'll be thankful you did all that extra work.

If you bury several caches, always use the X and Y amounts of the first cache to place the others. You may have to do a lot of looking around for an appropriate location, but once you find one, you won't have to memorize another set of numbers for each cache.

Once you have located a suitable cache site and established that you are not being observed, start digging. A cache tube should be placed vertically in the ground. Not only will this require less time to dig a hole, but you will be able to retrieve your cache without digging up the entire tube. The top of the tube should be at least 12 inches under ground level. If your cache site is in or

near a crop field, put it twice as deep to minimize the chance of discovery if a farmer decides to plow over your area. There is no reason to dig deeper than this unless you want to, just remember that the deeper you dig, the longer it will take you to retrieve. Two 30-gallon trash cans should be placed on a large tarp next to the cache hole before you start digging. These are to catch the dirt removed from the hole which should be dumped elsewhere. You want the ground after burial to look exactly the same as it did before you came. To do this remove the sod from a 2-foot square area with your shovel and set aside. You may find a hand auger easier to use than a shovel or post hole digger, especially if your hole is much deeper than 3 feet. Use a weighted string to measure the depth of the hole while you're digging. When the hole is deep enough, slide the tube into it. If necessary, fill in the sides with dirt for a tighter fit using water to help settle the dirt. While covering the cache, tamp the dirt down often and add a bit more dirt to make a very slight hump over the cache. Replace the sod you removed earlier. This slight hump will settle after the first couple of rains and prevent a depression from forming where your hole is. Once again, check the area to make sure you've not been seen and leave to dispose of your extra dirt.

I return to check on my cache sites at least every 3 months. Some authorities state that you should only return every year or so, but this depends on your situation. I am often in my cache areas anyway and a little stroll is not going to draw much attention. Also, very few of my acquaintances suspect, fewer still know, that I am a survivalist. Only my family knows that I have caches and where they are located. Maintaining a low profile is an absolute necessity when caching. Unless you've buried your cache in the backyard, the only protection your cache has is secrecy.

Other than in an emergency, the only time the cache should be retrieved is to rotate/replace items every 3 to 5 years. For the sake of speed, the tube should remain in the ground and everything in the cache should be replaced with new items. When rotating cache contents, have a complete set of new items ready to be placed in the cache. The idea is to simply pull out all the previously stored items and quickly replace with new ones. After returning from the cache site, check the previously cached items for damage or deterioration, repair or replace the items that need it, and use these to rotate with another cache. A cache can be thought of as an insurance policy, a wise investment that you hope you'll never have to use. ●

## STORAGE:

# Cache

*Burying arms, food, medical supplies and other material in a safe place, 'just in case'...*

BY GALEN L. GEER

*This article is reprinted from the July, 1986 issue of ASG- The editors.*



The author takes compass readings for burying and mapping a cache.

**T**HE MAN STOPPED to wipe the sweat from his forehead. His clothes were dirty and torn, blood stained his shirt from the now crusted-over wound in his shoulder. He was close to the cache now. A few hundred more yards and he would again feel the safety and comfort of a firearm.

There was also food, a change of clothes and a first aid kit he could use to treat his wounds. There were other tools he needed as well. By nightfall he would be back at his farm. After dark, when he knew the three men would begin to relax he would return and kill them. His wife, and daughter, if they were still alive, knew the plan. He went over it again in his mind then let his thoughts drift back to the morning and to the spot where he would see his son laying dead in

the field. He vowed to give the boy a proper burial.

He shook his head and pushed the grim memory of what had happened to his family and what was happening now out of his mind. The lives of what remained of his family were swaying in the balance. He did not have time to reflect on what had gone wrong. His cache was now the final edge he needed to survive.

Something from a drugstore novel? Or, is it a picture of that remote, yet possible world we fear? As late as the 1930s families continued to bury caches of arms, medical supplies and food on their farms "just in case." Although it was a holdover from the frontier era they did serve a purpose and more than one American family owed its survival to a hidden cache of arms and/or supplies. I can still

remember my own father standing on top of a small hill in Oklahoma on our farm and pointing to where my grandfather had kept a rifle hidden for several years "just in case." Even today I know a few farmers and ranchers who still keep a "peacemaker" in a barn or outbuilding just in case they are caught outside when some uninvited guests drop in.

Modern families are again establishing an emergency cache. These modern caches are a far cry from what was buried by the hardy people of the 1800s and before. A growing number of families actually carry what could be called a "mobile cache" in their car. Lightly referred to as a "bug-out kit" the mobile cache is actually a safety net carried by a few people who feel they may be caught in a freak storm while traveling, or, if the world falls off the edge and begins tossing nukes around they may not have time to do more than head for the hills, leaving everything else behind. Other families have buried small caches of supplies and fuel along their escape routes to help them reach a retreat and still other families, fearing that it may be later than most of us are willing to admit, have already established one or more caches on their land.

**Confusion** — Today there is some confusion about the cache. Just exactly what is a cache? How long should it be left alone? How is it hidden? How do you find it again and even what is put in a cache and how, are all very serious questions a lot of people are asking. Some survivalists believe a cache is nothing more than a year's supply of food shoved in a back room and waiting for the big bang. That is very, very dangerous thinking.

If you are giving serious thought to the problems of survival then the question of a cache should be near the top of your list of survival planning. As you plan your cache, along with all of your other survival plans, you must give serious consideration to the type of cache you need. Consider your situation and what the cache is for. In the opening of this article the man was going for a retreat cache of arms, clothing, food, medical supplies and tools designed to provide him with the edge he needed to recapture his retreat. The retreat cache, such as the one he was going after, has only one purpose and that is to rearm and reequip a person in an emergency.



Under this map and compass is a cache of equipment.

The second type of cache is a route supply cache. If, and when, you have to flee from the city to your retreat chances are better than fair you will not be able to stop along the way to your retreat and buy a fresh tank of gas. A route supply cache is exactly that, a cache in the route to your retreat which will help you reach it safely. A good rule to follow when establishing a route cache is to place one cache midway to your retreat if it is less than three days walking time from your home and to divide the route into thirds if its more than three days walking distance. At each cache you should stash enough food, and other supplies to get you from that point to your retreat. If you don't need to dig up other cached supplies on your way to the retreat don't. You may be able to return for those still hidden supplies at a later date.

**Construction** — There are two basic types of cache construction, that is, the container the cached materials are hidden in. One container is made from PVC pipe, which will last under the harshest conditions and still remain in peak condition. The second is the box type covered with various impervious clays. In either case the size of the container is dictated by the largest object to be cached.

First let's consider the PVC method. PVC stands for Polyvinyl chloride, a very strong form of plastic. This type of cache is fairly easy to make and will last longer than any of us once it is hidden away. The pipe

can be obtained in any size from one inch to 12 inches in diameter. For a PVC cache container you will need the following materials: a length of PVC pipe to fit your needs; two end caps for the pipe; one can of PVC sealant or Volclay; a length of plastic tube 3/8-inch in diameter two-and-a-half times as long as the pipe; one can of Freon (or substitute); styrofoam packing beads (enough to fill the container 1/2 full); and two tablespoons of silica gel in a small metal container with a dozen or so small holes punched in the container to allow air flow.

Your first step is to seal one end of the pipe. After sealing add about two inches of beads to the bottom of the pipe then push one end of the plastic tube into the pipe so it is buried in the beads at the bottom.

Pack your gear around the plastic tube being careful not to pinch the tube. Once all of your gear is packed put in as many styrofoam beads as it takes to fill the container. Now place the can of Freon on the ground next to the pipe so the can is upright. Wrap the can with a rag (it will get very cold) and have your partner punch a small hole in the top of the can. Quickly place the end of the plastic tube over the hole so the escaping gas flows into the tube. It will take quite a while for the gas to empty itself, however it will. If the tube begins to get too cold to hold wrap it with a rag. Let the can empty itself. As soon as the hiss stops quickly pull the plastic tube out of the pipe, push the metal container of silica gel into the beads,

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After burying a cache, Geer takes a break. Planning, building and burying a cache is hard work.

then quickly cap the pipe and seal it with the Volclay.

It is a good idea to let the pipe stand overnight then seal it again before taking it to the hiding place.

The second type of cache requires a little more work, however, I think it is more practical than the PVC for one reason and that is size. If you bury your cache the PVC must be buried one of two ways, either standing up or laying down. Either way it requires more work in burial and thus is a little harder to handle than the box method. Also, in the box method you can pack firearms on top so they can be reached without having to dig the entire cache out of the ground. An advantage if you are tired or injured.

Remember the size of the cache is determined by the largest item to be cached. The materials for a box are about the same except that you are going to build the box out of 3/8- or 1/2-inch plywood for starters. Cut your plywood sections measuring them carefully so that the inside dimensions are large enough to allow an inch at either end of your largest object. For strength cut your pieces so that the sides hold up the top and the ends are flush inside the two sides, top and bottom. This has two purposes. One is that it will be easier to open by prying off the lid once the Volclay is chipped away, two the weight of the dirt covering the cache is supported by the two sides and the two ends.

When you are ready to build your box use glue to hold it together, by glueing the two sides to the bottom,

then glueing the two ends in place. Once the glue is dry turn the box over. If you used 3/8-inch plywood for the box drill 1/8-inch holes every four inches two inches deep around the bottom of the box. If you used 1/2-inch plywood for the box drill 3/16-inch holes every four inches two inches deep around the bottom of the box. These holes are drilled into the sides and ends from the bottom. Into each hole drive a wooden dowel, coated lightly with glue of the same size as the hole drilled. Use these dowels in your box in place of nails or screws. They will not carry moisture with them thus will not rust or weaken the box over the years. Once you've completed this step let the box dry and "rest" for 48 hours.

After resting line the entire box with heavy plastic such as the type used to line basement walls. Don't tack the plastic to the box. Use the tip of a hot iron to heat seal the edges of the plastic together so that it forms a tight liner for the box. Leave enough plastic to fold over the contents once it is packed.

Just as the bottom of the PVC pipe is filled with the Styrofoam beads do the same with the box, spreading about two inches of beads over the bottom of the box inside the plastic liner. Now pack your gear in the box placing your weapons in last so they will be first out once the cache is dug up. After everything is packed fill the box with the beads then push the plastic tube into the beads between the edge of the plastic and the contents. Follow the same procedure for the Freon as you did with the PVC

pipe however you can gather the plastic around the tube to keep any Freon from escaping. If you do gather the plastic be sure to put the metal container of silica gel inside before gathering the plastic around the tube.

Once the can is empty use the iron to seal the plastic. If you have several seams to seal tape them with black plastic tape after heat sealing for added safety.

Now glue the lid in place and repeat the procedure with the wooden dowels. After letting the glue set, paint the entire box with two or three coats of Volclay and let it dry thoroughly before hiding your cache.

**Cache Types** — As I pointed out earlier there are two types of cache. One is the retreat cache and the other is the route cache. The retreat cache is designed to rearm and re-equip you so that you can return to your retreat if you have been forced out of it. A cache is not designed to allow you to live off the supplies in it for more than two or three days. A long term survival cache is a store of supplies, food, etc. Don't make the mistake of trying to hide a year's supply of food in the ground. The larger the cache the greater the chance of it being discovered by someone else.

A retreat cache should be based on the following: equipment, ammo, arms, food to supply two people for 48 hours; medical equipment to treat basic injuries; and lightweight so it can be retrieved by one person working alone and wounded.

Keeping that in mind, select your items very carefully. A .22 system is much smaller, and easier to store than a larger system. The best system is still the Charter Arms AR-7 Explorer Survival Rifle and the Charter Arms Explorer II Survival Pistol. If worried about having to face human adversaries, you may want a larger-caliber defensive system. Store at least one or two extra magazines as well.

You should also include two survival knives in the cache (one for each person) and a small folding fuel tab stove as well as small cook kit. Store only dehydrated foods, not freeze dried or canned and make sure the foil pouches are still intact. For added safety heat seal the individual pouches in plastic bags before packing.

Another important item to be stored is a pocket water filter, or

*(Continued on page 66)*

resublimated iodine crystals. Your first aid kit should be a belt kit you can attach to your belt and take with you when you leave. Finally select a light nylon pack with which you can carry the gear away from the cache. Once you dig up a cache plan to leave the area as soon as possible, taking the gear with you!

The route cache is slightly different than the retreat cache because the route cache is designed to help you get to your retreat. Since most of us plan to drive to our retreat the idea is to have enough food, ammo and fuel stashed along the way to complete the trip. Fuel can be stored up to five years if it is stored in top quality five-gallon fuel cans that are painted with Volclay and sealed with no air in the container.

How much fuel you cache depends on your route. Suppose your retreat is four hours driving time from your home and the auto you plan to reach your retreat in burns 15 gallons of fuel over the entire route. You should plan to cache the 15 gallons at the half-way point as minimum and it would be a good idea, considering gas stations may be closed or "sold out of fuel" when you leave, to cache enough fuel one-half that distance to allow you to reach the cache. This other cache is a standby cache that if not needed is ignored. You can return for it later.

Another type of route cache is the

"walking route cache." The idea of this cache is to allow you to travel lightly over the route to your retreat (thus, travel faster) by not requiring you to carry so much along the way. As I pointed out earlier you should split the route into thirds if it is more than three days walking time and if three days or less divide the route into halves, burying your cache at the half-way point.

In both the fuel and walking you should cache enough of the needed items to support your efforts only. Don't try to bury all of your supplies with plans to pick them up later. As an example, for a fuel cache at the half-way point you would bury the following: 15 gallons of fuel protected with gas saver in five-gallon containers; one AR-7 Explorer Survival Rifle; 100 rounds of high velocity .22 ammo; 48 hours' supply of dehydrated food for planned members of party; small first aid kit.

You may want to add other items to your cache, such as: combat knives, maps, clothing, etc. Whatever you add should be something you will be leaving home without but will need before you reach the retreat.

If your retreat is reached by walking, however, you're not going to need the fuel while you will need other items, such as a change of socks, perhaps even a full change of clothing. At the last cache along the route you may want to have buried additional

ammo (in case you have to clear the retreat), plus, your food needs along the route can be broken up and buried at each retreat. A walking route broken up with three caches might consist of the following.

Cache #1. Arms for each member of the party to supplement existing arms. The weapons could be one AR-7 survival rifle for the group with pistols for other members, either .22 caliber revolvers or Explorer II automatics. The important point about arms cached along a route is not to mix the calibers. Also, don't plan on getting out of the house with your Hi-power and digging up ammo along the route. If you lose the weapon before you get to the cache and all you've cached is a supply of 9mm it will be pretty useless. Cache both arms and ammo when you stash them, if you want to add a box of ammo for your favorite handgun, the one you plan to leave with, do so, but don't plan on having it with you. Anything can happen in escaping from your home.

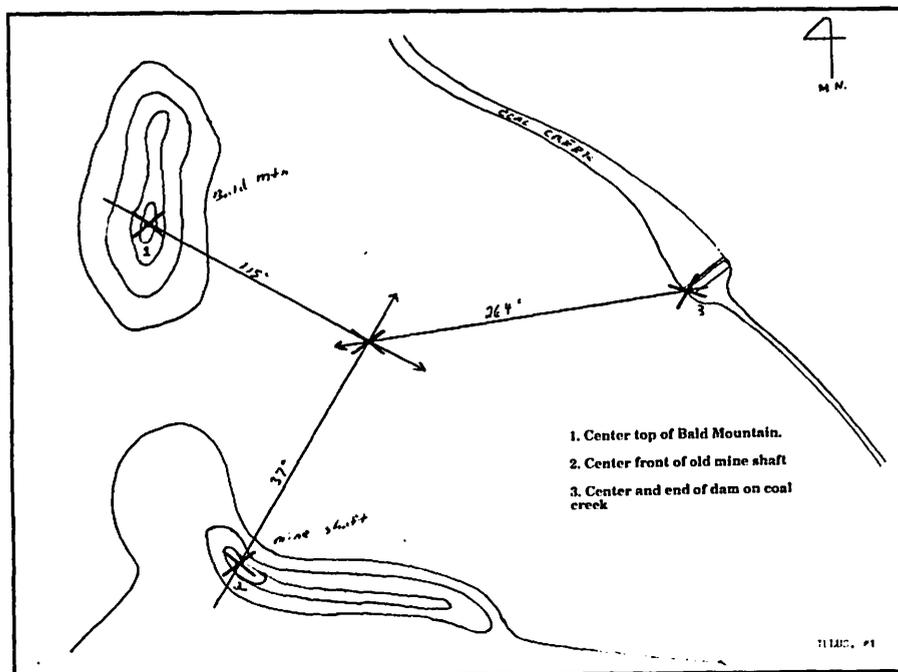
Other items in the first cache should include the food your party will need, a small camp cook kit to prepare it in, matches, firestarter, a change of clothing, first aid kit, maps, if needed, poncho or other shelter.

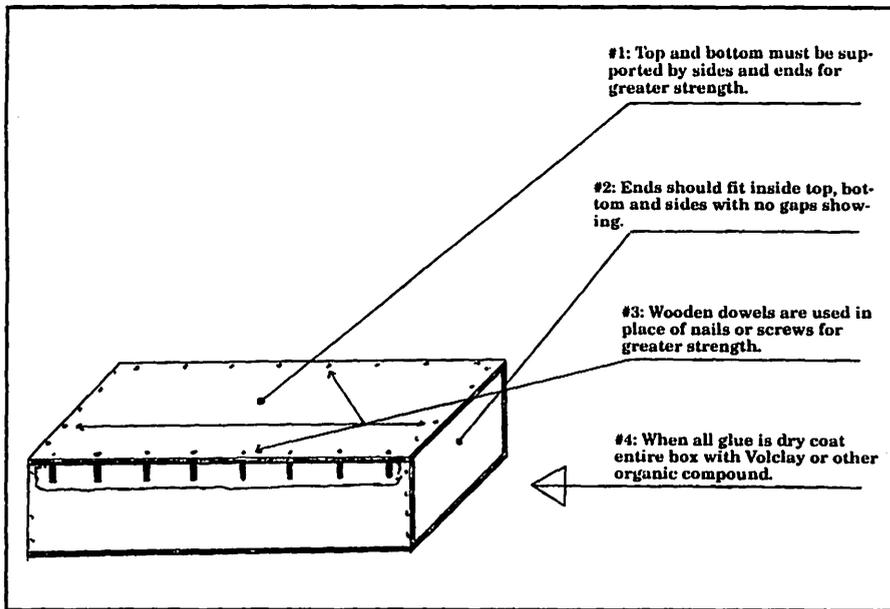
Cache #2. Since everyone is now armed there is no reason for additional arms, however chances are you'll need more ammo. You'll also need food to keep you going to the next cache. Other items, which you might have excluded from the first cache could include binoculars, extra socks, and other easily carried gear.

Cache #3. The final cache should provide you with the last bit of food needed to get you to the retreat, additional ammo supplies, perhaps some weaponry you might need if your retreat is already occupied, such as smoke or tear gas canisters.

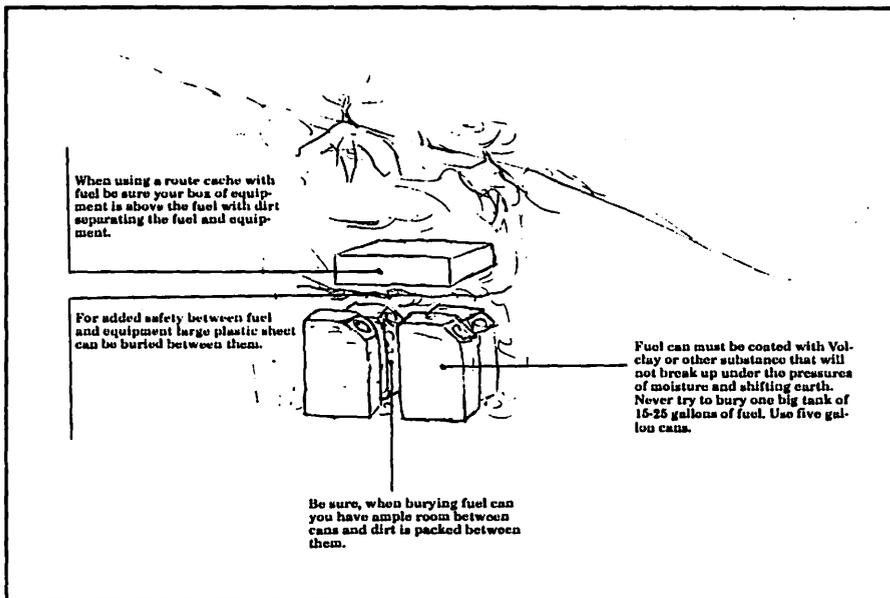
**Location** — Regardless of the type cache there are several rules to follow regarding where you place the cache. First don't use a prominent landmark to locate your cache. Any landmark will attract others to it and thus increase the chances of someone else discovering your cache. One of the best methods for hiding a cache is the compass method. First locate where you plan to bury your cache. Choose a well drained location where you can dig easily. Draw a rough sketch map of the surrounding area and choose three different compass shooting loca-

This is a sample map showing where compass readings are taken to locate a cache using the compass method.





The basic plan of a cache box. Use wooden dowels rather than nails to avoid rust.



A burial plan for fuel and equipment.

tions and take a reading from each point using magnetic north as the common reference point. From each location shoot a careful reading in degrees from the compass' magnetic north to the cache location. On your map draw a line from the point where the reading is taken to the cache. Repeat this two more times from two separate points so that the three readings intersect exactly at the location of the cache. All of this information must be carefully recorded on your map sketch. Once you are back home make a better map, writing down any details that might help you find the cache. When the map is completed make an additional copy of the map, store one copy with your "bug out gear" and the other copy should be hidden where you can quickly find it.

Make sure your family knows where to find the map.

Another method of cache burial often touted but not really very practical is hiding the cache under or near a telephone pole or fence post. Both of these areas can be easily seen from the road and there is a chance you would be seen burying your cache. By using the compass method you can place the cache a hundred yards or so from any road or trail. Chance of it being discovered is then minimal.

When you bury the cache, be it for the retreat or route, the cache should be under at least four feet of earth. Don't bury your cache at the base of a large tree. Roots from the tree can puncture the walls of the cache breaking it open and allowing moisture to ruin it. When you do begin digging your hole for the cache spread a large

sheet of plastic on the ground and pick up all the ground litter, including rocks, clumps of grass, sticks, etc. Place these on the plastic then dig your hole carefully putting the dirt on the poncho. When your cache is in the hole and you are ready to cover it up put the soil back in, tamping it down as you replace it in the hole. Remember the soil was compact when you dug it out, by tamping it back down you will avoid having a big mound of dirt when you are finished. You will have some dirt left when the hole is filled in because of the area now filled by the cache. First replace the ground litter then take the excess dirt away from the cache and spread it around so it is not seen by nosy people.

While both the retreat cache and the walking route cache will only have one box buried the cache of fuel will be another problem. Each fuel can must be buried by itself so that if one is ruptured it does not spread to the others. While the three or four fuel cans and the equipment can all be located in the same hole don't try to put the fuel cans and equipment into one big box. A better method, and one that insures a leaking fuel can will not ruin the other gear, is to dig a pit wide enough so you can stand your fuel cans upright in the bottom of the pit and pack six inches of dirt between the cans. The box of other gear is placed on top of the fuel cans with at least three inches of dirt on top of the fuel cans.

Once your cache is safely hidden forget about it. Don't return to the cache every few months, dig it up and check to see if everything is still in good condition. The more you visit the cache the greater the chance of it being discovered. An annual visit to the cache location just to check the area to see if anything might have been dug up is enough. Once every three to five years dig the cache up, replace the fuel, food and ammo supplies, check everything to make sure it is still in good condition, replace the silica gel and Freon then rebury the cache for another three to five years.

Chances are, we hope, you will never need the cache. If just one time you need the gear you buried to keep yourself alive, to reach your retreat or to take your retreat back from some uninvited guests then all the effort you put into supplying the cache, burying it and maintaining it will pay off with the edge between death and survival. ●

# Better Safe Than Sorry

'The idea of caching may be drastic to some, but not if you are a student of history'...

BY IAN MCINNIS

The author served in the 75th Ranger Battalion of the U.S. Army for three years, has been a survival instructor for 10 years, and has traveled extensively in Europe—The editors.

**L**ET'S face it. The idea of actually taking your prize possessions and putting them into hiding, or caching, seems almost ludicrous.

Personally, I like to get them out and just "play" with them. I take great pride in owning my toys. Caching, to place something in hiding, really does seem a bit drastic in a sense, doesn't it? In this article the assertion that everyone must decide for themselves stands alone. Is the time at hand? Only you can answer that. Still, if you think it may be, keep reading.

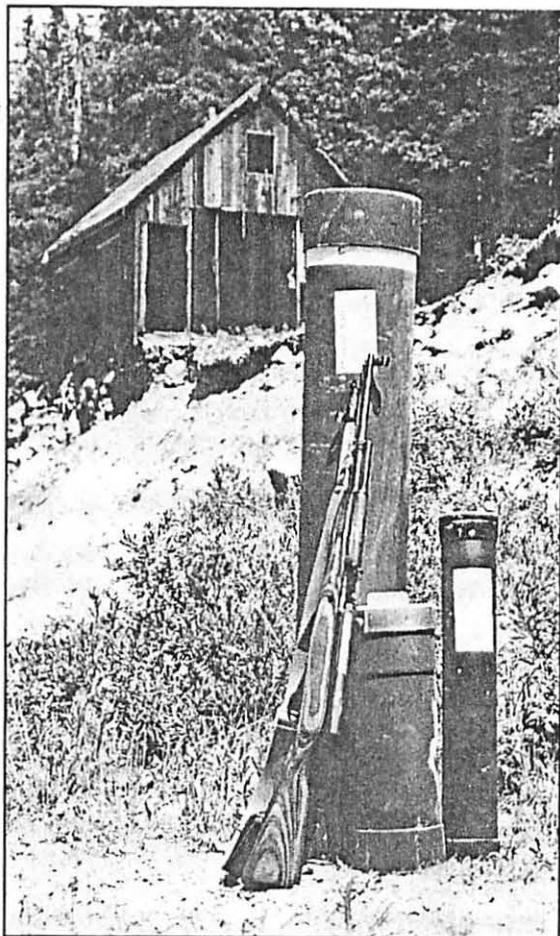
In an effort to focus on a more practical or rational point of view, the past must be explored. Historically, people have always used so called implements of war for both peaceful and forceful purposes. To foment uprisings, disturb the peace, or to thwart the same. By implements of war we mean, tools such as firearms, bows, edged or pointed objects and blunt instruments. The people who advocate "gun control" (a euphemism for people control) do not actually fear the implements of war, they fear those who possess the implements of war. Therefore, the agenda must be seen for what it really is: a plan to control a population, while limiting the liability to those seizing the power. A historical list of these lessons would fill volumes and volumes. Clearly, our own history should ring a familiar bell in terms of people control. The British

Crown, advocated the total disarmament of the colonial population by whatever means possible, including, finally, shooting all those civilians bearing firearms.

Caching, or hiding clearly stands as the antithesis of this agenda. Caching must be more than just stashing them in your back yard. It must be carefully contrived and perfectly executed. So, for the sake of simplicity and organization here, caching has been divided into three "threat" levels. Each level corresponds to the threat level perceived by the individual caching. Then, a brief description of caches or an anatomy of a cache. Finally, a complete explanation for deployment of your cache.

Level one, defined as a hasty "hiding" of your cache items. This, most often, will be hidden in the home or work. The principal idea, to have the item close at hand. The major disadvantage, it can be found relatively easily by a trained searcher, thus, a high risk. Preparation for the caching items does not require extensive work, only light plastic covering like 4 mil bags and light oiling. Level one most commonly will be used when the threat level to your cache items tends to be low.

Level two, has a more serious nature to it. Here you will prepare the cache for a longer term. The threat to the items you have is potentially high, perhaps they are either illegal or will be. In a level two cache, preparation will be similar to a level three, the deploy-



A selection of different cache tubes. The author likes PVC tubing, SDR-35 (sewer and drain pipe). This pipe comes in standard lengths and caps are standard fittings.

ment will differ. The proximity to your operational area must be far enough removed to be out of direct range, yet, still within a half hour of travel under normal circumstances. For example, a gym locker or a friend's garage. Here, the cache will be available, though not directly accessible.

Level three, the threat is imminent. Signals have given you a clear cut reason to be greatly concerned. Perhaps, confiscation or incarceration could transpire. Thus, a level three cache must be prepared for a long term storage. High threat level caches tend to be organized like military caches for obvious reasons. Deployment should be within a one hour range of your operational area and be set up to meet the needs you feel may arise. The critical nature of a level three cache calls for strict attention to detail. There are several ways to deploy high threat caches, including burial, submersion and concealment.

**Anatomy of a cache**—When the cache parameters require long term

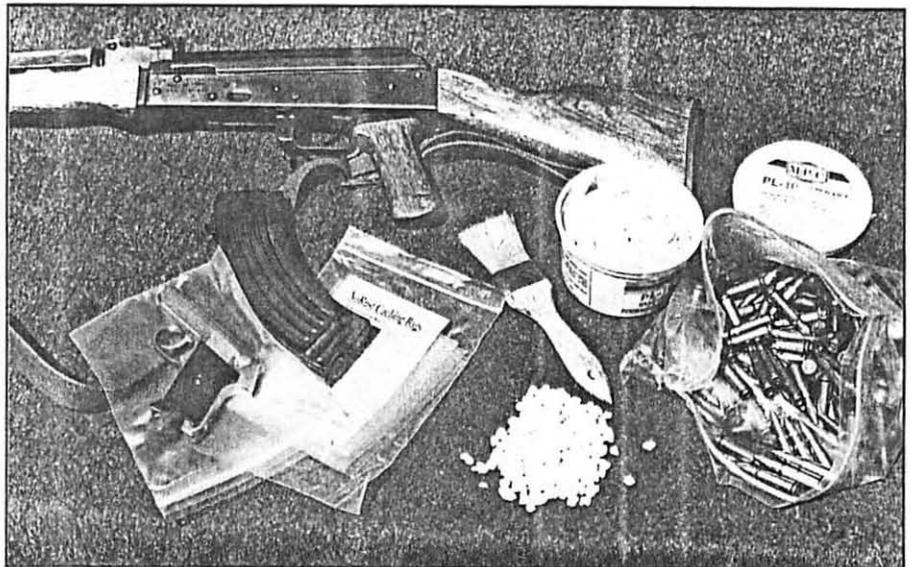
storage capabilities, the cache must be deployed using a layered system. This layering consists of four elements: the item you are caching, an inner protective membrane, a closed barrier and a container. We will discuss each of these briefly.

1. The item you intend to cache. For the sake of the article, the author uses an AKM rifle, a .22 pistol, some ammo and a selection of gear.

2. Each item that contains ferrous metal (metal made with iron) must be coated or covered with a protective membrane to restrict corrosion or rust. Here the author uses a thin coating of lithium grease, although there are many excellent such preservatives. A word of caution, some products designed for specific applications may not be suited to long storage. Check with the manufacturer to be sure. Also, the heavier the preservative you use, the more cleaning there will be. Stocks made of plastic need no special treatment. Wood stocks should be treated with the manufacturer's suggested treatment like linseed oil. Chinese imports, come with a heavy coating of grease, for good reason. The cacher should take a lesson from them.

3. Once coated, the items get the bag. A good choice would be a 4 mil thick plastic bag. Some bags like the ones shown are laced with a special treatment to resist oxidation. Double bagging offers the most security in the event of a container compromise. Simply push the air from the bag and seal it shut. Here the author uses simple zip ties from the any automotive store.

4. There are many different types of containers available to the public. The author likes to use PVC tubing, SDR-35 (sewer and drain pipe) this pipe

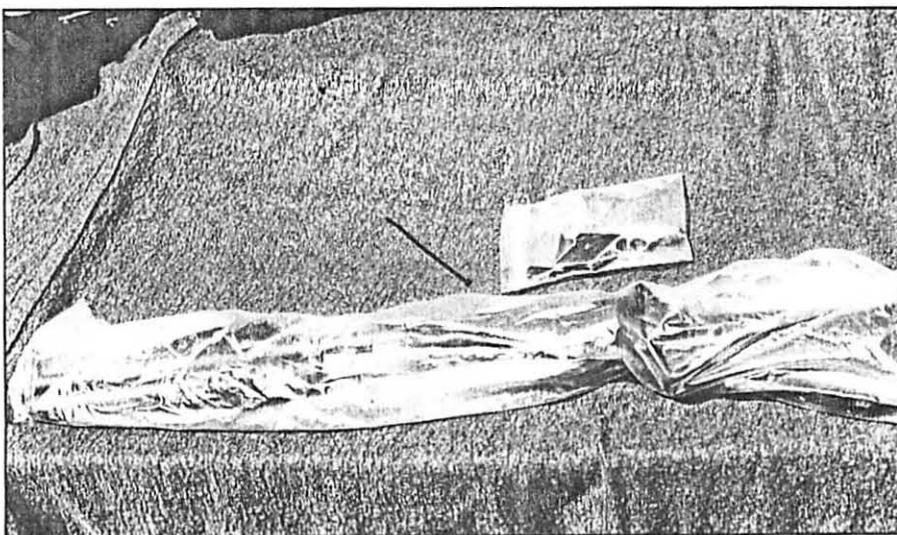


Cached items should be encased in inner protective membranes and protected with desiccant and some type of grease if possible.

comes in standard 20-foot lengths and the caps are standard fittings. To cut the pipe, use a reciprocating saw. Permanently seal one end with PVC glue and cap the other end with a standard boot cap. The Patriot Safe shown here is an excellent example of the pre-assembled caches on the market. To seal the lid for long term storage, use the same lithium grease around the inside of the lid to create an air tight, water tight seal. When the lid is pressed on the safe, an air lock is created through the compression of the air in the container. Once the air pressure settles, the lid is held in place by a negative vacuum, much like the thermal dynamics in a hot or cold beverage container. To remove the lid, equal force must be exerted on lid upwards. If you have difficulty, a hole may be drilled in the top of the lid to offset the air pressure.

Cache containers using threaded closures can leak due to capillary action. Great care must be exercised to insure a correct leak proof seal. Use an "O" ring or a gasket if possible. The author has learned that grease alone will not seal the threaded closure well enough. When out shopping, use a keen eye, some plumbing parts are not built to high enough tolerance standards to achieve the right fit. Be sure to get good parts or purchase a pre-made canister from a reputable company. In the long run this will save you time and money.

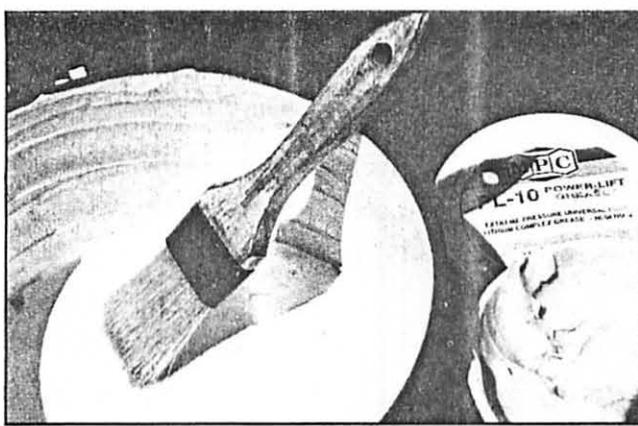
Place the items you intend to cache into the canister. A dry run or two may be needed to get all the parts in satisfactorily. Finally, desiccant can be helpful to reduce any residual moisture trapped inside the container. Desiccant, hygroscopic by nature ( meaning to attract moisture in the atmosphere) will trap the moisture and hold it. Arguably, desiccant is only needed in areas where the relative humidity is high enough to rust things standing still, but the added safety will help. Here the author used CaSO<sub>4</sub> known as Dri-rite. This desiccant can be found in many drug stores and mail order houses. It does not create any gases or third agents when exposed to water, making it excellent for caching. Place the desiccant into a breathable sachet, like an old cotton sock, then, toss it into the canister prior to sealing.



Automotive zip ties are used to seal items to be cached in protective 4 mil-thick plastic bags.

**Strategic, Tactical Planning**—Strategic and tactical considerations for a level three cache.

1. The site you choose must be carefully chosen to meet the demands.



The author uses lithium complex grease to seal the lid of his cache tube for long term storage.

A. Dependable. Under situations of duress, does the site have the ability to have a security team watch over it?

B. Proximity. If transportation becomes scarce, can the site be walked to?

C. Control. Do you have control of the site or will there be construction? Could earth movement cause a possible breach of the site?

D. Site address. Can the site be easily located, are there landmarks to guide you?

2. Deployment. Choose a site familiar to you. Perhaps one that you know from your childhood or hunting trips. Geographic points not subject to change can not be over emphasized. Large outcroppings of rocks, permanent manmade structures or physical landmarks all may help you later when you go to retrieve your safe. Finally, you must find or create an accurate address to your cache site.

A site address contains the following bits of data:

1. Find the six or eight digit grid coordinate by using a standard military grid system. See FM-21-26 *Map Reading and Land Navigation*, for more information.

2. Draw a physical map of the cache site. Detail the major land marks not subject to change. Use a sturdy paper then treat with a map preservative.

3. The contents of the safe, a basic description.

4. The date the cache was placed in the ground.

5. If any of the safe contents are subject to time limitation, like food, medical supplies.

6. Also, include any information on safety precautions such as booby traps (not recommended), warning devices or area hazards such as high power lines, gas lines, unfriendly people etc.

While there are several ways to

cache a level three cache, here we discuss a burial type.

To create a space for the cache, plan on working. Power tools, such as post hole augers will make the job easier, still, hand tools will be handy. Keep the site as sterile as possible. Earth removed from the hole you create should be treated

with caution. Ground cloths help keep the environment clean surrounding the site. Remember, the earth or soil you displace must be removed. A good way to remove the soil would be burlap sacks. If the area resembles an archaeological dig, it may tip your hand. A vertical space (90 degrees to the ground) will offer less of a metal registry, yet, a well placed cache site, in theory, should support any type of burial. One very important advantage to placing the cache container perpendicular to the ground will be the retrieval of the cached items. A cache placed parallel to the ground must be totally removed, while a perpendicular cache can be accessed and re-sealed.

Dig the hole or make the place you want to use suitable. Once your cache is in the earth or placed in your space, the area needs to be physically sterilized. Create a natural look. Do what you can to make the cache site look as natural as possible.

Finally, a few tips to remember when

caching.

1. Think in terms of security. While you may not be under duress when you cache the items, retrieval may be quite another story.

2. Keep the information about your cache to yourself. A braggart may not find his cache there upon his return. If you must tell someone, do so via your address.

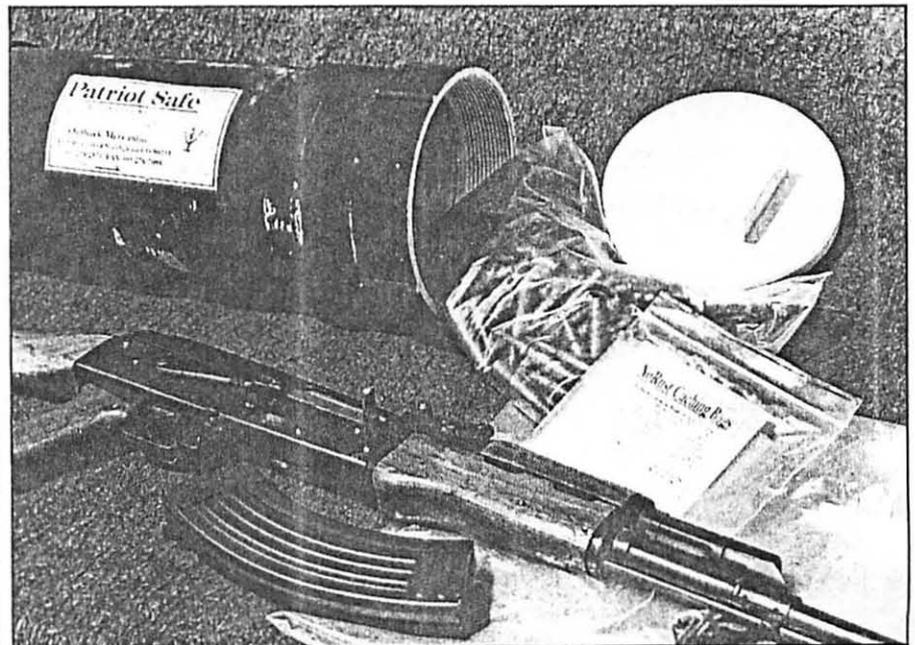
3. Make several caches, complete with a variety of items. Remember, things in good supply today may be scarce in a rush.

4. You can not totally secure a site, metal detectors in the hands of a pro will find the cache, so cache in places they will never look. Increase any possible search area by going further out.

5. Read all the data you can on the subject, it can never hurt to be as well read as possible.

In closing, the idea of caching may be drastic to some, but not if you are a student of history. Think in terms of being a treasure hider. What do you treasure most that may come under the scrutiny of certain people? Cache it.

We stand as the last bastion of freedom. Now, as in the past, we have a duty to perform. It does seem a bit odd to put your prized possessions into a cache, and what a shame we even must consider it. Still, the alternative of hoping nothing happens, while waiting to see, is simply foolish. Indeed, drastic times always call for drastic measures. So do your part, dig deep, but do not delay, because the future of this great land depends, in part, on what you have prepared for. ●



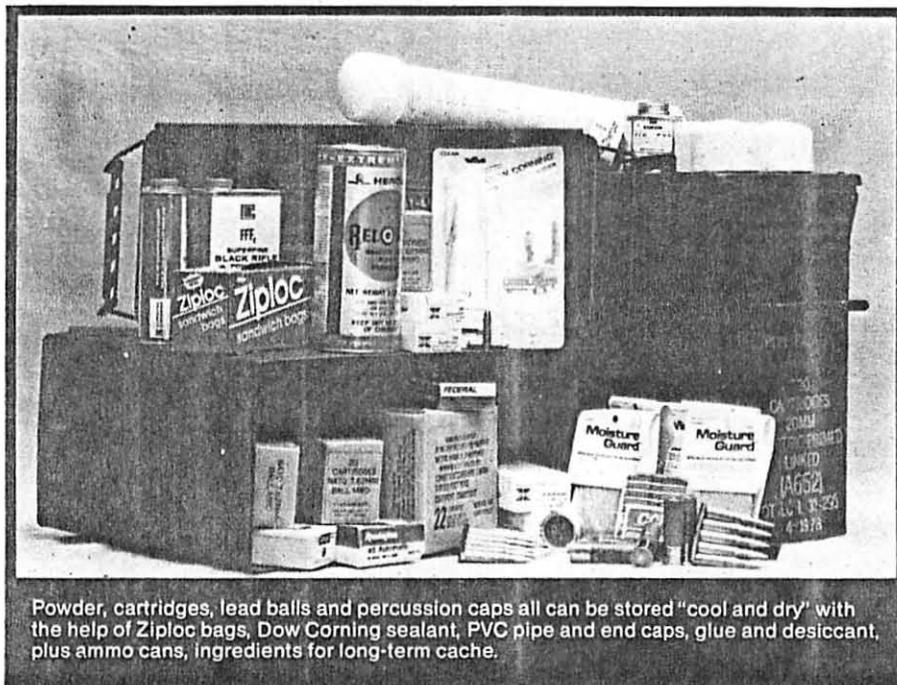
The author is ready to cache some of the items shown here in a Patriot Safe from Outback Mercantile (P.O. Box 33614 Northglenn, CO 80233; phone 303-279-2571).

## CACHE CREATIVITY:

# Ammo Storage

Projecting cartridges, powder and primers into the future can present some problems . . .

BY MARTIN BLACK



Powder, cartridges, lead balls and percussion caps all can be stored "cool and dry" with the help of Ziploc bags, Dow Corning sealant, PVC pipe and end caps, glue and desiccant, plus ammo cans, ingredients for long-term cache.

**F**or the most part, folks who're interested in survival agree that ammunition—metallic cartridges, supplies for reloading metallic cartridges and, perhaps, black powder, lead shot and flints—will become valuable survival commodities in future times.

Projecting factory-made ammo, smokeless powder, bullets and birdshot, plus 2f and 3f black powder, percussion caps and maxi balls into any kind of future more than a year or so distant in time can present problems. Ammunition, in the future—succeeding a natural cataclysm, economic collapse or conflict—may not be available to those who now are unwary, careless and/or ignorant of possibilities. Ammunition is the functional ingredient of firearms for hunting and self-protection. To be without ammunition is to be without an important survival tool.

Long-term storage of ammunition and/or its components requires knowledge and consideration of some facts:

The metal components of ammunition—brass cases, primer hulls and percussion caps, copper bullet jackets and lead bul-

lets—are subject to corrosion. This deterioration of metal is speeded by airborne moisture.

Smokeless powder is highly flammable in some circumstances, but not explosive—unless confined in a tightly closed space. If stored improperly, smokeless powder is subject to rapid chemical deterioration. Powder that is deteriorating presents an acrid, irritating odor. And deteriorated powder may show rust-colored dust in the bottom of its container. Powder that has deteriorated should be destroyed by burning—in small piles out of doors.

Black powder is simply a primitive explosive. It can be rendered totally ineffective by even a small amount of moisture, or, in dry conditions, can be detonated by a spark from static electricity.

Excessive heat, moisture and light are the enemies of ammunition. The commercial slogan, "Store In a Cool, Dry Place," goes for ammo and its components.

Sunlight and high temperature can destroy smokeless powder in as short a period of time as 90 days. Excessive moisture, high humidity, really, accelerates deteri-

oration of the powder in a remarkably brief time span.

That proper storage is the best preservative is borne out by the fact that some smokeless powder which left the factory before World War I (yes, I) remains in excellent condition today as a result of proper storage. World War II powders, less carefully stored, have deteriorated to a point of total ineffectiveness. What that means is, proper storage can buy a half-century of time—or longer, for a cache of ammunition and/or its components.

It's obvious, then, that truly long-term storage of ammunition and its components is possible.

Cool and dry means a stable, dehumidified atmosphere, and an air temperature of less than 60 degrees. Powder manufacturers and military weapons storage depots rely on thick-walled semi-underground magazines for temperature control, plus waterproof packaging to deal with the moisture problem.

In preparing to store metallic cartridges, it's proper to take care of the "dry" part of cool and dry first. There are a number of avenues available for keeping cartridges dry indefinitely. Some ammunition is available in bulk, protected from moisture by military-service-required waterproof packaging. With other calibers, those less popular with or not used by the armed forces, it's up to the survivalist/shooter to carry out his own moisture-proof-packaging. Here's an opportunity for creativity. Of course, one can purchase military surplus ammunition boxes, complete with lid clamps and seals. Think of the number of .22 LR cartridges that could be stored inside a 2-foot length of 2-inch diameter PVC pipe with a desiccant and capped at both ends, caps epoxied into place. Such plastic tube elements could be safely buried in crawl space under an outbuilding, disguised as plumbing or simply buried. Ziploc bags, heat-sealing freezer bags, plastic food containers sealed with vinyl tape, any number of common food storage techniques can be used to stock ammunition for the long haul. Whatever the container, label it with contents and packing date. As with food, use that stored the longest first.

Smokeless powder is another bag of cats entirely. Powder is supplied in fiber or metallic containers. Factory packaging is meant to protect smokeless powder during transport and over a considerable shelf-life period of time. Therefore, the manufacturer's package is the best basic container for long-term storage of smokeless powder, and the original container should not be opened, and neither should the powder be transferred to any other kind of container—particularly glass—for extended storage time.

Smokeless powder containers, however, can be augmented with protection from PVC plastic tubes, sealed at either end with epoxy or "Superglue," or Tupperware outside containers with sealed plastic bag inner-liners, and so forth. (What goes for smokeless in terms of protection, also goes for cartridge ammo, primers, percussion caps and black powder, though each should be stored in a separate container, apart from the other items.)

Where and how smokeless powder is stored holds equal importance to the sort of containers in which it is stashed away. The powder should be stored in a designated magazine area. Everyone in the family should know what the magazine is, and where it is. And the magazine should be secured against the inquisitive family members who're too young to understand. In normal times, an individual family's magazine may be highly visible, bearing signs that warn, "Danger, Flammable Materials," or "Explosives," or "No Smoking." A magazine cache for future times, of necessity, must carry a different sort of profile—invisibility. It also must be easily accessible in time of need and, if circumstances demand, portable.

Any magazine should be secured against break-in, that is to say, LOCKED, and otherwise protected by mechanical or, possibly, electronic alarm systems.

The magazine should be located in a stable temperature area: in a waterproofed concrete underground vault, deep enough to escape winter frost and mid-summer heat; behind a false wall in a basement; in cool crawl space under a dwelling, with trapdoor access from inside the house; or whatever cool, dry cache can be contrived. Perhaps the magazine can be disguised as something it isn't—an old refrigerator or freezer chest, for example.

Perhaps at some risk, the magazine location can be truly creative. How about a discarded hot water heater tank, or an abandoned well or mine tunnel, or the bottom of a pond?

Given that cartridge ammo, black and smokeless powders, primers and caps, etc., are carefully sealed inside PVC pipe elements or Tupperware boxes, then packed in ex-military ammo boxes that are clamp-sealed tight, concealment can be adapted to all manner of camouflage. For example, the surplus ammo boxes can be further sealed inside plastic paint buckets and submerged in lake or pond—or, for that matter, an in-use septic tank—to be retrieved at time of need.

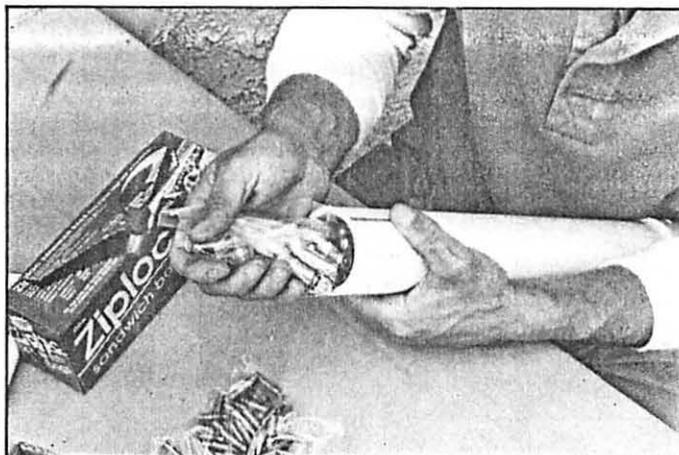
For utility, safety and, extended storage life, here are a dozen tips:

1. Do not, prior to packing and sealing, permit ammo to become exposed to any sort of petrochemical compound, includ-



LEFT—PVC glue bonds end cap to pipe.

RIGHT—Ammo goes into Zip-locs, then into pipe.



LEFT—Desiccant bag goes in last.

RIGHT—Silicone sealant goes on top of pipe.



ing gasoline, kerosene, paint thinner, powder solvent, or light lubricating oils. These can penetrate cartridge cases, past bullets or primers, or container seal, and ultimately render powder inside the cases

totally ineffective.

2. Keep your stored ammo away from appliances or equipment that can (a) break down and flood an area, i.e., dishwasher, laundry equipment or water heater, and

(b) create a fire hazard, i.e., anything electrical that is subject to motor burnout, short circuits and sparks, and welding gear.

3. Don't smoke in or near your magazine. Better still, just don't smoke; you may, in the future, need lungs as well as ammo.

4. Keep your magazine area free of trash that could (a) block emergency access to your ammo cache, or (b) contribute to a fire.

5. Don't store ammo in the luggage compartment of a vehicle which, any time it's on the road, is subject to rear-end collision and/or fire.

6. Take care to store your ammo and reloading supplies in units no heavier than one person—a small person at that—can carry easily.

7. Do not store ammo in containers too large to be carried through doors and

hallways, or too cumbersome to load into vehicles.

8. Keep storage units sealed until use is imminent.

9. In storage and transportation, keep primers away from powder; limit units to 10-20 pounds; and keep storage units separate both by distance and some non-flammable physical barrier.

10. If the magazine is in or near a dwelling, insure that one or more walls or lids or whatever, will vent in case of fire. Pent-up gases could result in an explosion.

11. Do not store ammo, primers or caps, or powder, in glass jars. Heat could cause ammo inside to burn; confinement of gases could result in an explosion; and glass shards could become lethal shrapnel.

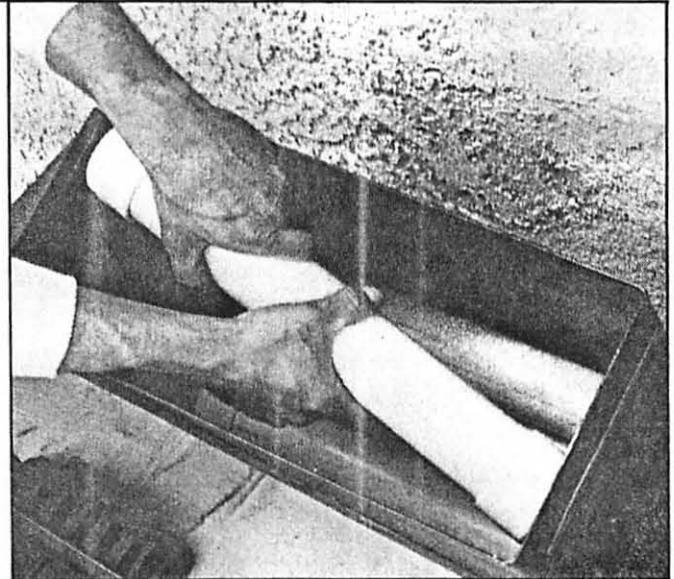
12. When setting up to reload, draw only small amounts of powder from the permanent magazine. Keep the reloading area squeaky clean and free of loose pow-

der grains.

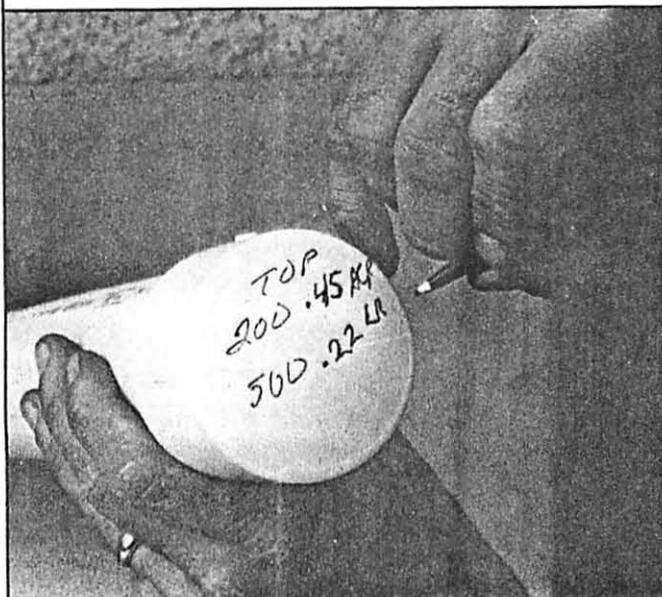
Probably climate is the most essential consideration in long-term ammunition storage. The dweller of the humid Gulf Coast will find it necessary to prepare for extremes of airborne dampness. The resident of California's low desert must keep his ammo away from extremes of sun and summer heat. The resident of Canada's great northern plains must protect his ammunition from extreme low temperatures. And the survivor in Oregon's coastal rain forest area must be concerned with continuing rainfall. The broader the climatic extremes, the more creative the survivalist must be in preparation of ammo and components for storage, and in building the cache/magazine itself.

Cool translates as 50 to 60 degrees F. Dry means total absence of moisture. Again, cool and dry are the essences of successful long-term ammunition storage. ●

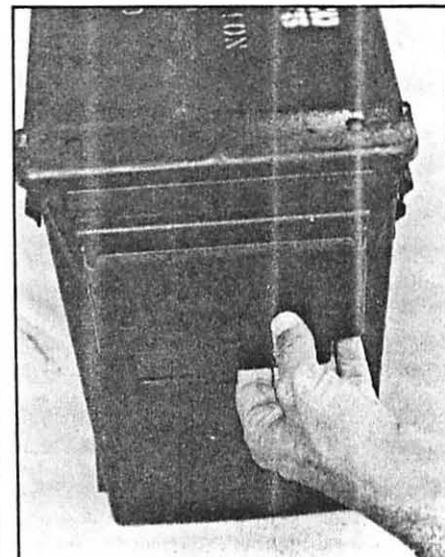
RIGHT— Pipe full of ammo gets another end cap.



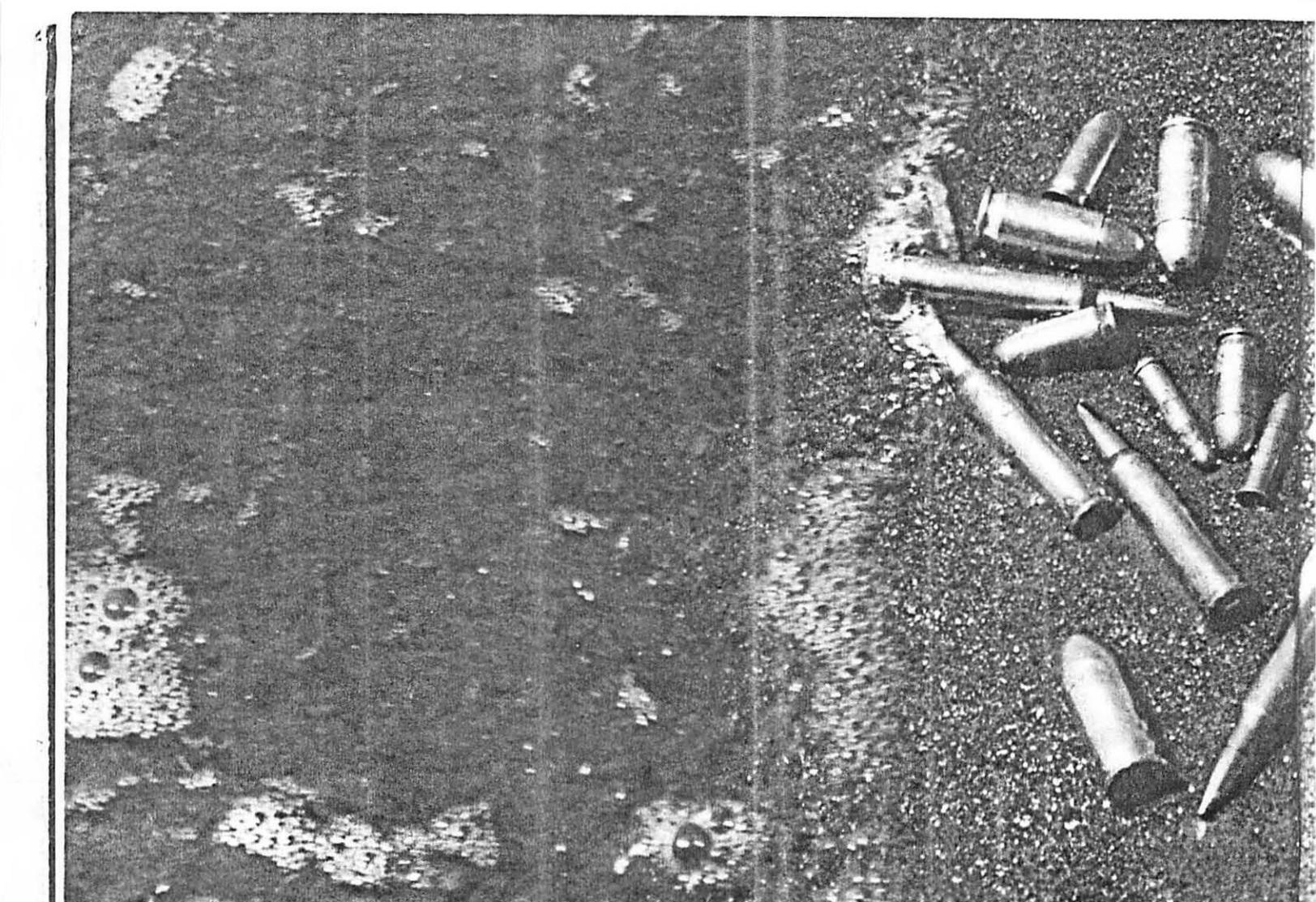
ABOVE— Cut to length, pipes fit 20mm ammo cans.



ABOVE— Top end is marked with contents.



LEFT— Can lid is left loose to prevent explosion in event of fire.



WET TESTS:

# WILL IT SHOOT?

BY R.E. (RICK) ALBACH

**A** recent movie preview prompted me to try some tests. In a scene, a man in a bathtub gets the drop on the bad guys by firing with the revolver he has concealed in the bathwater. This film bit, combined with my interest in handguns, and the large amount of rainfall hereabouts—Portland, Oregon—aroused my curiosity. Also, there are quite a few survivalists out there who bury large quantities of ammunition, along with firearms, food and myriad other items, all to be used when things go to pieces.

I don't own a pistol or revolver I'd care to fire underwater, so I decided to conduct some tests, soaking ammunition in water. Because many people I know have stocked up on .22 Long Rifle ammunition, I decided to try that first. Later, I figured "Why not?" and started soaking all types of hand-

gun ammunition to which I have access. Presently, the range includes a .357 Magnum, 9mm Parabellum, and .22 LR. After some searching, I came up with some .38 Special target loads.

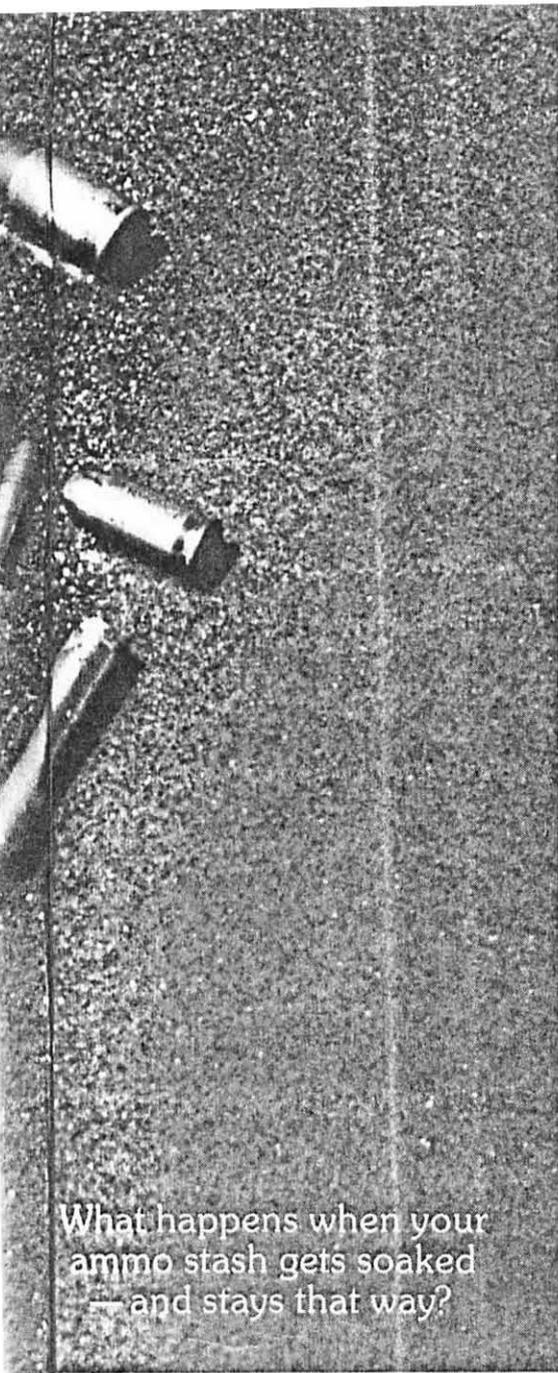
I gathered a handful of each caliber and dunked them into a pan of water. After an hour's soak, I tried a sample of each. Everything fired without a hitch. In another hour, I tried a sample of each again. Every round fired without a problem. I kept at it. Four hours, then eight, and finally 12 hours of submersion in water, and I encountered no problems. By this time, I had used up all of my original soaked ammo, so I started again. This time, I included some .308 Winchester and because all the testing was being done in my basement, a full-bore .308 out of a 10-inch barrel was more than I wanted to

tackle. So, when I went to the range, I would try the .308 in my silhouette pistol. At this time, I decided to make my tests a bit more comprehensive, so I called a friend who has a .30-06 and asked him to drop some ammo in water, and we could test it when we went to the range.

Again, I started to fire the newly soaked ammo. I began the second series at 12 hours. Finally, at 19 hours, some .22 LRs failed to fire. The brand was Federal Lightning. I tried another batch and, like clockwork at about 19 hours, it failed to function at all, even after repeated strikes around the rims by the firing pin.

Ah ha! Finally, I had some results.

The rest of the ammunition was tested at four- to six-hour intervals. Fortunately, this time, I had immersed a bunch of ammunition. At 48 hours, one of my 9mm



What happens when your  
ammo stash gets soaked  
— and stays that way?

reloads sounded less than strong and recoiled weakly. Now I was getting somewhere. Apparently, though, it was that single round that was weak, as none of that particular loading batch showed signs of weakness or malfunction.

At two days, 18 hours, the CCI Mini-Mag and Coast-to-Coast Master Mag .22 LR's showed a failure rate of about 30 percent under repeated strikes around their rims, with 10 percent firing very weakly and being unable to penetrate a pine board. However, 60 percent fired well. After three days, I encountered 50 percent failure with all .22 LR's.

Problems with the .22s was not what I had expected. Until the sixth day, there had been only the one weak load with any of the centerfire ammunition. On day six, all of my reloaded 9mm jacketed hollow-

#### WET TEST LOADS

- .22 Long Rifle—** Federal Lightning, CCI Blazer, Winchester/Western T-22 (Target), Remington Thunderbolt, Remington Target, Coast-to-Coast Master Mag.
- .38 Special—** Commercial 148-grain reloads.
- 9mm Parabellum—** Winchester/Western Silvertip (Factory); Hornady 115-grain JHP, 4.7 grains of Winchester/Western 231, CCI standard primer; cast lead 123-grain RN, 4.2 grains of Bullseye, CCI standard primer.
- .357 Magnum—** Hornady 158-grain JSP, 15.5 grains of Winchester/Western 296, CCI Magnum primer; cast lead 158-grain RN, 15.5 grains of Winchester/Western 296, CCI Magnum primer; Sierra 200-grain JRN, 15.5 grains of Winchester/Western 296, CCI Magnum primer.
- .308 Winchester—** Nosler 168-grain BTHP, 40 grains of Winchester/Western 748, CCI standard primer; Nosler 150-grain BTSP, 40 grains of Winchester/Western 758, CCI standard primer.
- .30-06—** Winchester/Western 180-grain Power Point, Federal 165-grain boattail.

point loads were noticeably weak, but all functioned the Smith & Wesson Model 39's action reliably.

This operation had started to drag out a bit longer than I had ever expected—and with unanticipated results. All of the people with whom I'd spoken earlier had assumed the .22 LR rimfire ammo would win the soaking contest hands down. As it turned out the .22s fared worse than all other ammo put to the water torture. I even had time to dry out some of the .22s while the rest of the testing was in progress. After a week of drying, about 60 percent of the misfired .22s would fire with, apparently, the same power as prior to being soaked.

After two weeks, the 9mm JHP handloads displayed about 50 percent mortality, and, after pulling the bullets, the powder was observed to be thoroughly wet. The remainder of the 9mm ammo was still firing, but weakly. All other loads functioned flawlessly.

After three weeks, the .22 LR and the 9mm handloads were still the only casualties. The .357 and other 9mm loads, as well as the .38s I'd managed to scrounge up, all fired with no negative effects that could be attributed to submersion. I'd also been able to try the .308 at the range and it, too, fired without loss of apparent firepower.

At 26 days, one Winchester/Western Silvertip 9mm factory load had allowed water into its case and failed to fire. Remaining Silvertips endured a month and longer. The Federal 9mm factory hardball loads were fully functional after an amaz-

ing two months' submersion. In fact, the pan in which I soaked the ammo rusted so badly that cartridges couldn't be seen in it. The .30-06 wasn't fired on schedule. My friend had been busy and had forgotten to bring it to the range each time we went out. So, the '06 received its initial test about two months after being submerged. Surprise, it fired.

Results of this testing seem to indicate that for handgun reloads a lead bullet is more likely to fire if its storage container should somehow spring a leak. Moreover, it appears that cannalured bullets prevent water intrusion so long as the reloader uses a tightly rolled crimp. For cases that headspace on the case mouth, a tight taper crimp and use of lead bullets insures long-lasting, water-resistant loads. For those who plan to store a large quantity of .22 rimfire ammo, it would be wise to invest in a Dazey Seal-a-Meal, or other plastic bag sealer, and waterproof each block of ammo separately. For rifle loads, properly sized necks are essential. The .308 Winchester cases I used were neck-sized only, and survived over a month under water without problems.

Factory centerfire cartridges seemed to be impervious to the water for the trail period. However, the single failure by the 9mm Silvertip indicates caution for those who plan to depend on water-soaked factory ammunition. Unlikely as it seems, a failure is possible.

The old adage may not be as difficult to follow as it was in the days of black powder, but it holds true still: "Keep your powder dry." ●

## NITRO-PAK:



# Storage Barrels

Watertight storage for emergency supplies...



### Staff Report

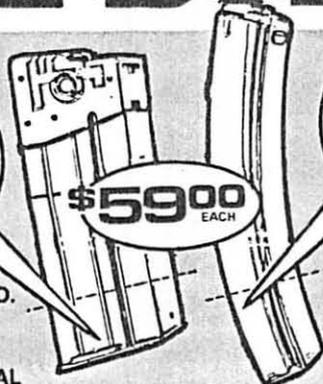
**N**ITRO-PAK is now offering super duty watertight storage barrels that are DOT (Department of Transportation) approved. The blue plastic barrels have a 15-inch diameter opening and come with a large black screw-on lid for easy access. The lid contains a high-density rubber gasket that seals out air and is watertight.

The barrels come in two sizes. The 30 gallon size measures 31 inches in depth and is 19 inches in diameter. It weighs approximately 16 pounds and sells for \$39.95 plus \$8.95 shipping. A 35-inch long firearm could fit inside. The 55 gallon size which sells for \$46.95 with \$12.75 shipping, has a 37½-inch depth and a 22½-inch diameter. It weighs approximately 22 pounds. Firearms up to 41 inches long could fit inside.

These storage barrels can be used for family emergency supplies. They are ideal for consolidating your gear and could even be buried for use as a cache. Clothing, food, first aid supplies, tools, guns, ammo, sanitary supplies, etc., all can be safely stored away in one barrel for future hard times. Another idea is to use the barrels for bulk grain storage. For more information contact: NITRO-PAK Survival Foods & Supplies, 13243 E. Rosecrans Ave., Dept. ASG, Santa Fe Springs, CA 90670; (213) 802-0099. ●

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