CARE OF EQUIPMENT

Bill Wiseman

I'm going to go over what I've found to be necessary in order for a rifle to shoot well. However, first I'd like to make a few remarks about what I do to prepare as gunsmith for a U.S. Shooting Team. Let me say, it's really a privilege to be chosen as gunsmith for the best shooters in the world. I never thought when I started out I would ever be working on rifles for Margaret, Writer and Wigger. I prepare by gathering all the equipment and parts I feel I'm going to need to service our team. I've sometimes put my own money into buying these, but I feel it is worth it, because I want to do the best possible job I can do.

At a big match like the world championships, there is a lot of work to do, not so much for the U.S. team but for any shooter from any country who needs assistance. I go to these matches prepared to work on anybody's guns. It's a matter of goodwill for the U.S. team and of personal pride to me to do the same job for a shooter from another country that I would do for a shooter from the U.S. I equate my job on the U.S. team with the pit crew in an auto race. If it wasn't for the mechanics, the race drivers wouldn't be out there. I always put the U.S. team work first so that the shooters know if something goes wrong, I'm available. I spend most of my time at the range so I am available to the shooters. I recrowned Dave Kimes' 300 meter gun in Switzerland. You never know what can go wrong at the match sight. It seems like each year I need to carry more parts, because shooters have so many different kinds of guns. As U.S. team gunsmith, I work on pistols, shotguns and running boar rifles as well, so it really keeps me busy.

At the World Championships in Switzerland, I ended up glass bedding four rifles the night before the event for Margaret, Diana and Schuyler because their guns were not shooting. The girls shot well the next morning in standard rifle prone without ever testing the rifles.

This brings me to glass bedding. What glass bedding does is to prolong the accuracy. As you know, wood absorbs moisture, so the bedding of your rifle changes slightly when you go from a humid climate like Florida to a dry climate like Arizona. This expansion and contraction will change the vibrations, the harmonics of the rifle, thus opening up your groups. I'm not going to tell you to have your rifle glass-bedded, but if you travel a lot, as most of you do in international shooting, I think you ought to consider it.

As shooters, it is important for you to choose a gunsmith that really knows what he's doing. There are a lot of people who can build hunting rifles and this is fine, but you need someone who knows how to accurize a fine target rifle. It may cost you a little more, but when you consider how much you spend in travel and entry fees to shoot, it should be worth it to be sure your rifle is shooting. I've personally spent a lot of time going to the best people available to learn about accuracy. The most knowledgeable people about accuracy are the U.S. benchrest shooters. A number of things that they do are already being done to your rifles. This year for the first time here at the international championships, several shooters used fiberglass stocks. All the benchrest shooters use fiberglass stocks to avoid bedding problems when traveling.

One of my pet peeves is people who don't clean their rifles. There is no way you can clean your rifle too much. As soon as you finish shooting, clean your rifle. I recommend Hoppes and a Parker Hale cleaning rod which is coated with plastic that strips off so you don't ruin your bore. Clean from the breech, never the muzzle. Use a cleaning rod guide. When you store your rifle between matches, clean it and then leave the barrel damp with Hoppes. Store it with the muzzle down so that any deposits that work off will not fall down into the bolt or trigger. You've heard all this before, but if you don't take care of your equipment you'll never get to the top.

Now, you see a lot of new things everytime you go to a rifle match. How can you keep abreast of all these changes? The rifles made today, like the Anschutz and Walther, are the best made. But there is always something more you can do to increase the accuracy. This is the job of the gunsmith. You should find a good gunsmith and stick with him. Also, the longer you shoot the more knowledgeable you will become about rifles because you will have an opportunity to talk with top shooters and top gunsmiths. Most of what you need to know as a shooter is good common sense.

Everybody is into triggers now. People are buying new triggers because triggers go out. There is no need to do this when a trigger can be reworked.

Many of you are having your guns re-barreled. Your barrel is a very important part of your rifle and the chamber and the headspace has to be just right. Only a competent gunsmith can determine this.

When you load your rifle, you should push the cartridge into the barrel with your fingers so that the lands of the barrel engage the lead tip of the bullet smoothly. You know that you meet a little resistance when you push the bullet in. This is why. The bullet is being engaged by the lands of the barrel. Eventually the throat of the barrel where the lands engage the bullet will wear out. You can have the barrel set back an eighth of an inch if the barrel itself isn't gone. We've done this in the Marine Corps with high power rifles, especially the first half inch of the barrel is the most critical. This is why you should use a rod guide when cleaning.

IV: I've heard that shooting Eley is damaging to the barrel because of the glass in the priming compound.

BW: All .22 ammo now has glass in the priming compound. This is because it's cheaper to make this way. We switched from Winchester Mark III to Eley because of this, but now Eley also has it. Just clean your barrel thoroughly and run a damp patch of Hoppes through it. That's all you can do. You know that all Eley isn't accurate anymore. You have to test for good lots.

JF: I can make a comment here on a test we did on barrel life using Hart barrels and Mark III. With cleaning every fifty rounds, the first indication of a ring from the glass in the priming compound would appear at about 25,000 rounds. When we didn't clean, we could begin to see this ring at about 500 rounds. Thus barrel life was prolonged about five times with cleaning. Now I would think this experiment would be roughly applicable to Eley. We don't get a ring with Eley, but we do get barrel erosion from the glass in the priming compound.

BP: Don't get too worked up about this glass. There is not a smallbore ammunition manufactured in the world that doesn't use glass.

JF: I want to make a comment in reference to what Bill said about goodwill. I think that the gunsmith, more than any other person on the team, really promotes goodwill for the U.S. At the Olympics there will probably be only two gunsmiths - the Russian and ours. There will be some manufacturers representatives also. These gunsmiths are looked on as complete professionals. It is understood that they work on guns of their own team first. But as a shooter I can turn my gun over to the Russian gunsmith and know he will work on it with the same precision and same dedication as he would his own team member's guns. I've been on team when we didn't have a gunsmith and we used the Russian gunsmith. We were completely satisfied, though sometimes horrified watching how he went about his work. There will probably be over a hundred countries shooting the Olympics and probably seventy-five of them don't have a gunsmith in their country. They save their problems all year to bring to our U.S. gunsmith. Bill will have a tremendous amount of work to do.

LW: Bill may have left you with the impression that when we go to these matches all our guns fall apart. This really isn't the case. He does more work for other countries than for us usually. However, when a shooter isn't getting the desired result at such a match, it's a big help to have a gunsmith who can check over a rifle and make some changes that may help. Then the shooter goes on the line feeling everything that can be done to make the rifle perform has been done. His mind is at ease with his equipment. The point I want to make is we need a competent gunsmith on the team that the shooters have complete confidence in. It's a big morale booster to have him on the team.

AM: Most of us on college teams don't have good gunsmiths. How much do you think the shooter should do himself?

BW: You should clean your gun. You can learn to adjust your trigger, and probably should so that it feels right for you. I wouldn't glass or have your Dad glass unless you really know what you're doing. When you come to matches like this, take advantage of the opportunity. I'm here to help shooters and I'd be glad to work on your equipment.

BP: The worst enemy a rifle has is a shooter because every shooter is a frustrated gunsmith. He can have his gun screwed up before God can get the word. If you take all his screwdrivers away from him and issue him a cleaning rod, Hoppes and some patches, he'll be better off!

BW: A lot of people out here are shooting horrible triggers, not because they are bad, but because they aren't adjusted. Ask a top shooter to feel your trigger and help you learn to adjust it.

JF: There are a lot of minor adjustments you can make, but most people don't bother to read the directions. Especially take care of your sights. Keep them in padded boxes other than when you're actually shooting. A lot of things that go wrong with your rifles could be avoided by proper care. Shooter maintenance requires no mechnical ability. If you do this and then encounter a problem that is more than loosening or tightening a screw that the instructions say are supposed to accomplish

this particular job, instead of tearing it apart on the kitchen table, go to someone who knows what he's doing to have it fixed.

BW: Sometimes shooters say to me, "I can't let you have my gun because I have a match this weekend". You may have to give up a weekend of shooting to keep from damaging your equipment.

On air rifle, about the only thing that can go wrong is the seals. You can replace these yourself and they only cost about fifteen cents apiece.

IW: I've heard on an air rifle after you fire your last shot, you should leave the latch open to relieve the pressure on the seals. Is this true?

BW: Yes, it's a good idea.

AM: What kind of brush and what kind of jag should you use to clean your .22 with?

BW: Use a brass brush and brass jag. A nylon brush doesn't scrub the barrel enough to really clean it.

BP: I had a pet peeve when I was coaching and that was a shooter with a big screwdriver. The only purpose of the receiver screws is to hold the gun in the stock. The stock is simply a platform that the receiver shoots off of. I've seen shooters take a long screwdriver and twist off a screw head trying to get a screw tight. How tight is tight enough? When a screw is in as far as it will go without excessive pressure, it is tight enough.

BW: Some of you have torque wrenches. The reason your rifle shoots better with a certain torque is because you are actually tuning the rifle. If your gun is glass bedded properly, you won't have a different torque between the two screws.

LW: It is important to check your action screws, especially after traveling with your rifle. If the gun is glassed, you can get the same amount of torque on the screws each time so that you aren't pulling your screws through the wood, which eventually results in stripping the wood and bottoming the screws against the action. Each day you should check your action screws. Just break them loose and then re-tighten them. The new type screws with allen heads are good because you can measure what you're doing and be consistent with what you are doing. I let this happen to me with the air rifle this year, and you'd think I would know better. The second day I was having problems, shook my gun a little and both the rear sight and the action screws were loose!

The prone shooters have researched this more than most and they are fairly well agreed on twenty inch pounds. Personally, I don't think that is enough. I use sixty inch pounds because I've tested my rifles and this works best for me. I think it depends on the make of rifle you shoot as well as characterists of each individual rifle. Don't torque a rifle that is not glassed because you'll soon pull through the wood.

JF: Phoenix is one of the worst places for action screws to change because of the dryness. Coming from Fort Benning it usually takes one and a half to two turns

take up the first day or two and then an eighth of a turn each day for I don't know how long. We haven't been here long enough for them to stop moving yet. Checking your action screws should be part of your daily routine in setting up your equipment. The humidity isn't the same everyday, even when you shoot in the same place.

EP: Should you use the same torque out here you use in Florida? That doesn't seem the same to me.

JF: Yes, it's the same. Your screw is just a little farther into the wood. This brings up something else. It's important to be sure your action screws aren't bottoming out. The front screw on an Anschutz has roughly six and a half turns before it bottoms. The rear screw you don't have to worry about, because if it bottoms it hits the bolt, you can't work the bolt any more so you know immediately. Also a screw can feel tight and not be holding the barreled action in the stock because it has bottomed.

I see two benefits of torque. One, you will check your action screws each day this way. Two, you will keep from stripping your screws or letting your action get loose.

IW: I've done some checking and with a regular short screwdriver, I average about sixteen to eighteen inch pounds pressure when I snug a screw. The girls might average a little less.

GP: Are you supposed to loosen your action screws when you travel with your gun on the airlines?

JF: Yes, but you should only break the screw loose, not loosen it a turn or two because then the barreled action is flopping against the stock and can crack the glass bedding. Just back if off slightly.

EP: How do you determine a good torque?

BP: Testing. Keep in mind that the stock is simply a platform that the gun shoots off of. All you need to do is fasten it to the platform. Now how tight is tight? You get it steady in the platform and another fifty inch pounds isn't going to make any difference if your bedding is correct.

BW: Fiberglass expands and contracts during the curing stage. Some fiberglass needs to cure forty-eight to seventy-two hours to be completely set. I always let rifles set up at least forty-eight hours - except at the world championships.

JF: Something that I've just become aware of from chemists who developed the polymers we glass with, is that glass must be taken up to 140° F for at least four hours to completely cure. It hardens at less than this, but isn't completely hard. Therefore, you might ruin your glass job in the hot trunk of your car in Phoenix when your rifle is not in a perfect position.

MA: Could you guys explain how you know when your barrel is going out? What is your first indication?

BP: When they get a wide ten!

MA: Colonel Pullum, I know when you were able to spend a lot of time on the range watching us, you often knew before the shooter when a gun was going out.

BP: You just watch group patterns day after day and you know the capability of the shooters. In good conditions, the groups begin to widen a little, but you must be watching day in and day out to be able to see this.

MM: You have to shoot a lot to be able to do this, but I can tell how I know. I began needing to take more windage than I felt I should be taking. Eventually the groups will begin to string vertically - but by then the barrel is really gone and has been for some time.

BW: In closing, I want to say I consider it a great honor to be selected as gunsmith for U.S. shooting teams. I've tried to prepare myself for this. I've shot rifle and pistol and shotgun so that I can relate to a shooter when he tells me he has creep in his trigger, or what pitch means to shotgun fit. I'm not on caliber as a shooter with Wigger or Writer or Margaret, but I've shot enough to understand what you tell me.

MA: Bill, we appreciate you sharing your expertise with us, even though the time is much too short to cover all the aspects of gunsmithing we'd like to know. Most of all, for all the shooters here, we say thank you for being behind the line when we need you.

USWIRO asked Jack Foster to make additional comments on Bill Wiseman's lecture on care of equipment due to the fact that time was so limited in Phoenix.

JF: First, I want to discuss preventative maintenance of your rifle. There are a number of things you can do to prevent problems developing with your rifle and its accessories.

1. Choose a good gunsmith. Especially if you are a collegiate shooter without gunsmithing available. Take your equipment to a reliable gunsmith once a year, whether it needs it or not, and have him go over everything. Make an appointment, so that you can watch the process and learn from it. This should save you the need for any emergency repairs during your shooting season.

2. Checking your action screws each time you shoot is very important and we discussed this during Bill's lecture. The one thing I might add is that once a month, if you shoot a lot, you may want to back out your front action screw to be sure it isn't bottoming. On an Anschutz this means approximately six and a half turns. More than this may indicate problems.

3. Check your butt plate screws also once a month. This sounds obvious, but I've handled a number of rifles for gunsmithing which weren't shooting and the reason was a loose butt plate.

4. Bolt should be given a small dot of heavy grease in the caming area once a month. You should also put a little grease on the ears on the bottom of the bolt that slide into the rifle chamber. In closing your bolt, you should never slam it shut as this causes unnecessary pressure on the sear which can be damaging. Cradle

the bolt handle in the V of your hand between your thumb and trigger finger, with the rest of your fingers around the stock, and slowly cam the bolt close with steady, even pressure.

5. You must take proper care of your iron sights. Remove them from the rifle when it is being transported. Iron sights should be on the gun only when you are shooting. Store the sights in a padded container. Use a brush, like a shaving brush, to dust the sights, especially if you shoot in a dusty place like Phoenix. After dusting you should apply a very light oil, in a very minute quantity, to the sights. Check for crisp clicks with a dial indicator. Your gunsmith should have one of these, or Bill Wiseman will do it at the tryouts for you. Sights can be rebuilt, if your gunsmith has the parts. Since most of you carry more than one gun, you might interchange the sights in practice, marking zero for both your rifles in your shooting diary. If one set becomes damaged you will then have a setting to use sights from your other rifle temporarily.

6. We've talked about cleaning already, but I would like to go over it step by step once more because it is the most important thing you can do for your rifle. You should clean approximately every box of ammo. You can't always do this, but it is the ideal way. The cleaning rod should be a one piece Parker Hale with plastic coating or a hard steel rod. A rod case is also a good idea. Grit embeds in brass or aluminum rods and in jointed rods. A word about a hard steel rod - you know that bearings are placed steel on steel without wear, however if you place a grain of sand between them, they begin to wear immediately. This is what I'm talking about with grit embedded in the rod.

Use a brass brush and brass jag. Take care of these to keep grit from getting to them. They should be encased in something in your shooting box. A swab is not enough to clean the lead out of your barrel. You will need a brass brush run through about five passes. For a solvent you can use Hoppes or any of the other good solvents on the market. If you see a lead or white colored stain at the muzzle, you haven't removed all the lead fouling. Use a rod guide to protect your chamber. Also it keeps solvent and fouling gunk out of the trigger mechanism. Until you get a rod guide, clean your rifle upside down. Clean through the bore, never from the muzzle. If you have a high, nonremovable cheek piece you will need to use a pull through cleaning string which you drop into the muzzle, attach the brush or patch at the chamber and pull it back through once, then repeat the process. It's easier to have your check piece made removable so cleaning isn't such a chore.

7. Margaret discussed care of your ammo at the end of her chapter on the "Effects of Weather". Reread it.

8. A word on packing and transporting your rifles and ammo. If you use the airlines and you will if you shoot international for any length of time, get the heavy metal gun cases. They are worth the price in saving damage to your rifles. Crack the action screws and tie the gun down securely. Carry nylon tape to the airport and after the airline has checked the guns, tape around the case over the latches on both ends and in the middle. For a Europe trip, also tape completely around the lid where it joins the case. Be prepared to catch your case as it emerges from the airline conveyor onto the carrousel.

For a carton or two of ammo, you can pad it in your suitcase, but you must declare it so the airline may ask to see it. You can also pad it in a metal,

waterproof container - get these at Army surplus stores. Call the airline you plan to fly and ask about regulations for both target rifles and ammo so you won't have a hassel at the airport. You may want to include a backpack or a folding luggage carrier with wheels, as you generally have to pack your equipment from the bus to the line a good distance in other countries.

9. Regarding spare parts, about all you can carry would be action screws and air rifle seals. You could interchange a trigger if necessary - a good reason for shooting one brand of rifle - or interchange sights. If the rifle is damaged, that is bedding or stock cracked, I think you would do better to borrow a rifle rather than to try taping, etc., if a gunsmith is not available to you.

Now, I want to discuss how to determine what the problem is if your rifle is not shooting, assuming you have been taking good care of your equipment. These are not sure-fire methods, but they should give some indication of where the problem lies.

A. Bedding - To check for a bedding problem, stand the rifle up vertically, butt on the ground, hold the rifle at the tip of the fore-end and rest your finger in the V between the barrel and the stock. With your other hand, loosen and tighten the front action screw. If you can feel any movement, you may have a bedding problem. Movement is caused by the action bending to fit the stock. If you have a dial indicator, you can use the same procedure with it and a magnetic clamp. The barrel should not move more than five-thousandths on the dial indicator. Also, you can give a slight rap to the barrel up and down and sideways, and the dial indicator should return to the same point. Glassing is not a cure all, but you can have your rifle glassed or re-glassed. It is the commoner's way of doing a suitable bedding job, rather than painstaking wood inletting.

B. Visually check the crown of the rifle muzzle if bedding doesn't seem to be the problem. If you can detect any scratch, nick or marring of the crown it can be ruining your accuracy. It will need to be re-crowned by a competent gunsmith.

C. Barrel - If both the above seem alright, your barrel may be going out. We discussed indicators of this earlier in the chapter. Your rifle should be re-barreled. It is good to get acquainted with a top-notch barrel maker before this happens.

Last I want to discuss how to adjust the single stage trigger. Jack Writer covered the two-stage trigger in his chapter. A single stage trigger cannot be safely taken down as far as a two-stage trigger. It should be no lighter than one pound (500 grams). To adjust, loosen the over-travel stop screw so that it isn't interfering with anything. Cock the trigger then slowly unscrew the screw in the side until the trigger goes off. You have now reached the point of minimum sear engagement. Give it a quarter turn of engagement, shut the bolt hard to be sure it doesn't go off a time or two. Then to adjust the over-travel, screw the trigger stop screw all the way in so it won't fire, then back off until it fires, and lock it in place. You will have some movement. If you take the trigger down too light you will have one of two problems. The trigger may set off someday when you are closing the bolt, or worse it may set off as you touch the bolt to remove an unfired round. Don't take the single stage trigger down below a pound.

A last thought. If you are interested in accuracy you might like to read The Accurate Rifle by Warren Page (The Handloader Press, Box 3030, Prescott, Arizona 86301 - price $8.95).

HOW TO GLASS BED AN ANSCHUTZ RIFLE

Materials Needed:

1. Bisonite Steel Glass Bedding Kit - Made by the Bisonite Company of Buffalo, New York (one kit will usually do two rifles)
2. One small can of Play Doh
3. Quarter inch paint brush (for release compound)
4. Masking tape
5. Scotch tape
6. Paper towels (for wiping up glass drips)
7. Paper cup and stir stick
8. Bisonite Glass Thickener (this is not in the kit)
9. Tough plastic piece filled to a cutting edge
10. Light gun oil
11. Rig, Lub-a-plate or STP
12. Silicone waterproof stock finish
13. Old toothbrush
14. Acetone and rags
15. Old sheet of plastic tarpoline

Equipment Needed:

1. Solid work bench with a vise firmly mounted on it. The vise should have rubber jaw covers so as not to damage the stock or barrel. A towel should also be used.
2. Half round chisel and a flat chisel
3. Awl or stylus
4. Electric hand grinder
5. Electric drill plus 3/8" and 5/16" bits
6. Wood block, measured to the height of your vise to rest the stock butt and action on while working.
7. Pocket knife.
8. Torque wrench to gauge pressure on the action screws.
9. Air hose or vacuum cleaner with a large funnel (use these to blow or suction out debris).
10. Punch

1. Strip the rifle. Take out the action screws and remove barreled action from stock. Remove trigger assembly, bolt and loading ramp.

2. Strip all the oil off the barreled action with acetone.

3. Chisel out about a sixth of an inch of wood off sides and go a bit deeper on the bottom. Remove debris.

4. Chisel out wood 1½ inches forward of the action inletting, as well as the action inletting itself.

5. Using an awl or stylus, draw a straight line along both sides of the action inlet so that chiseling will be straight for a more professional looking job.

6. Place barreled action in stock using a cleaning patch or two folded several times and placed under the barrel at the fore-end of the stock to determine how deep the action rests in vertical relationship to the stock. Keep the barrel level while doing this.

7. Again using the stylus draw around the end of the action inlet nearest the butt for use as a guide for the grinder. Then grind out the wood chips and debris. Use of an air hose or vacuum cleaner will facilitate this.

8. Using a 3/8 inch router bit in an electric drill, drill out the action screw holes. Drill first from the inside of the stock, turn it over and drill to meet inside drilling. Brush out wood debris.

9. Fill loading port hole with Play Doh (or modeling clay). Also make a roll (like a fat worm) of Play Doh to put just at the edge of chiseled out part of barrel channel.

10. If you are doing a position rifle, cut the stock down even along the barrel sides as far forward as the glass will go.

11. Drop the action screws into the stock and tape in place from underneath with masking tape.

12. Place a strip of masking tape cut to fit over the recoil lug in the stock. Also place a piece of masking tape cut to fit in the lug hole of the action. This procedure will prevent bottoming.

13. Scotch tape one strip the entire bottom of the action, cutting tape out of the grooves with a pocket knife.

14. Paint release compound all over the underside and sides of the barrel, action, trigger guard, action screw holes, action screws and extrusion. Smooth with finger to prevent bubbles.

15. Fill action screw holes with Play Doh.

16. Mix proportionately even amounts of Bisonite steel glass and hardener compounds until the glass mixture will follow the stirring stick with a stiff point. For one rifle mix only half of the compounds.

17. Place a plastic tarpoline under the work area in case glass drips. Put a wood block under the stock to keep it solid and level.

18. Dab the glass mixture into the stock with the stirring stick. Be careful not to get bubbles, especially in the screw holes. Cover about ¼ inch deep with this glass mixture.

19. Add Bigonite thickener compound to the remaining glass mixture until it is very stiff. It should not drop from stir stick.

20. Fill the stock almost full with glass. It should be about 1/4 to 3/4 inches full of glass mixture.

21. Carefully place the action straight down into the glassed stock and snug down with the action screws until the action is at the predetermined level with the stock. Use the cleaning patches again under the barrel at the fore-end of the stock.

22. Put on a little more glass along the sides if it is not above the stock sides.

23. Let the rifle stand about one hour or until the glass begins to harden.

24. Using a oiled knife, or better still a piece of tough plastic filled to a cutting edge (so as not to mar the stock), cut off excess glass along the stock sides. This is only a rough trim. If the glass is still spongy, wait a bit longer before cutting.

25. Carefully crack the action screws and tighten again.

26. Let the rifle stand for twenty-four hours untouched, the first four hours at 140° F.

27. Then remove the action screws. This will take some force. An electric soldering iron may be touched to the tip of the screws if they refuse to budge. A final result is to drill them out and begin the job again if they will not release.

28. Remove all Play Doh and tape from stock and barreled action.

29. Clean stock inlet and barreled action by wiping with acetone to remove all release compound. Wipe barreled action with a very lightly oiled cloth.

30. Tap the screw holes to be sure all debris is removed. For the Anschutz you will need a 6 mm by 3/4 mm metric tap.

31. Oil the screw holes lightly.

32. Remove the trigger guard. Clean and remove Play Doh from this cavity.

33. Knock out glass from bolt and scrape screw holes.

34. Use grinder to sand edges of the action hole, trigger hole and along recoil lug.

35. Drill out action screw holes with a 5/16 inch bit.

36. Remove all glass shavings with air hose or vacuum.

37. Carefully so as not to mar the stock, file glass even along the sides of the stock. Don't file downward toward the inletting as this would encourage rain to run under the barrel.

38. Sand the glass along the sides with fine sandpaper to finish.

39. A silicone waterproof stock finish may be used to coat the barrel channel where it is not glassed. This will protect the wood against water, temperature changes and humidity.

40. Replace barreled action into the stock after reassembling. Lubricate action screws with Rig. Use torque wrench to set correct pressure.

ADDITIONAL BOOKS FOR INTERNATIONAL SHOOTERS

1. Cooper, Kenneth H., M.D., M.P.H., Aerobics, New York, New York 10019: Bantam Books, Inc., 666 Fifth Avenue, 1968. ($1.50)

2. Cooper, Kenneth H., M.D., M.P.H., The New Aerobics, New York, New York 10019: Bantam Books, Inc., 666 Fifth Avenue, 1970. ($1.50)

3. Cooper, Kenneth H., M.D., M.P.H., Aerobics for Women, New York, New York 10019 Bantam Books, Inc., 666 Fifth Avenue, 1973. ($1.25)

4. Gallwey, W. Timothy, The Inner Game Of Tennis, New York, New York 10022: Random House, Inc., 457 Madison Avenue, 1974. ($7.95)

5. Karlins, Marvin and Lewis M. Andrews, BioFeedback, New York, New York 10017: J. B. Lippincott Company, 521 Fifth Avenue.

6. Maltz, Maxwell, M.D., F.I.C.S., Psycho-Cybernetics, New York, New York 10018: Pocket Books, Simon & Schuster, Inc., 1 West 39th Street, 1969. ($1.95)

7. Page, Warren, The Accurate Rifle, Prescott, Arizona 86301: The Handloader Press, Box 3030. ($8.95)

8. Pullum, Bill and Frank T. Hannenkrat, Position Rifle Shooting, New York, New York 10022: Winchester Press, 460 Park Avenue, 1973. ($10.00)

9. USAMU, International Rifle Marksmanship Guide, Fort Benning, Georgia 31905: The Commander, USAMU. (Free)