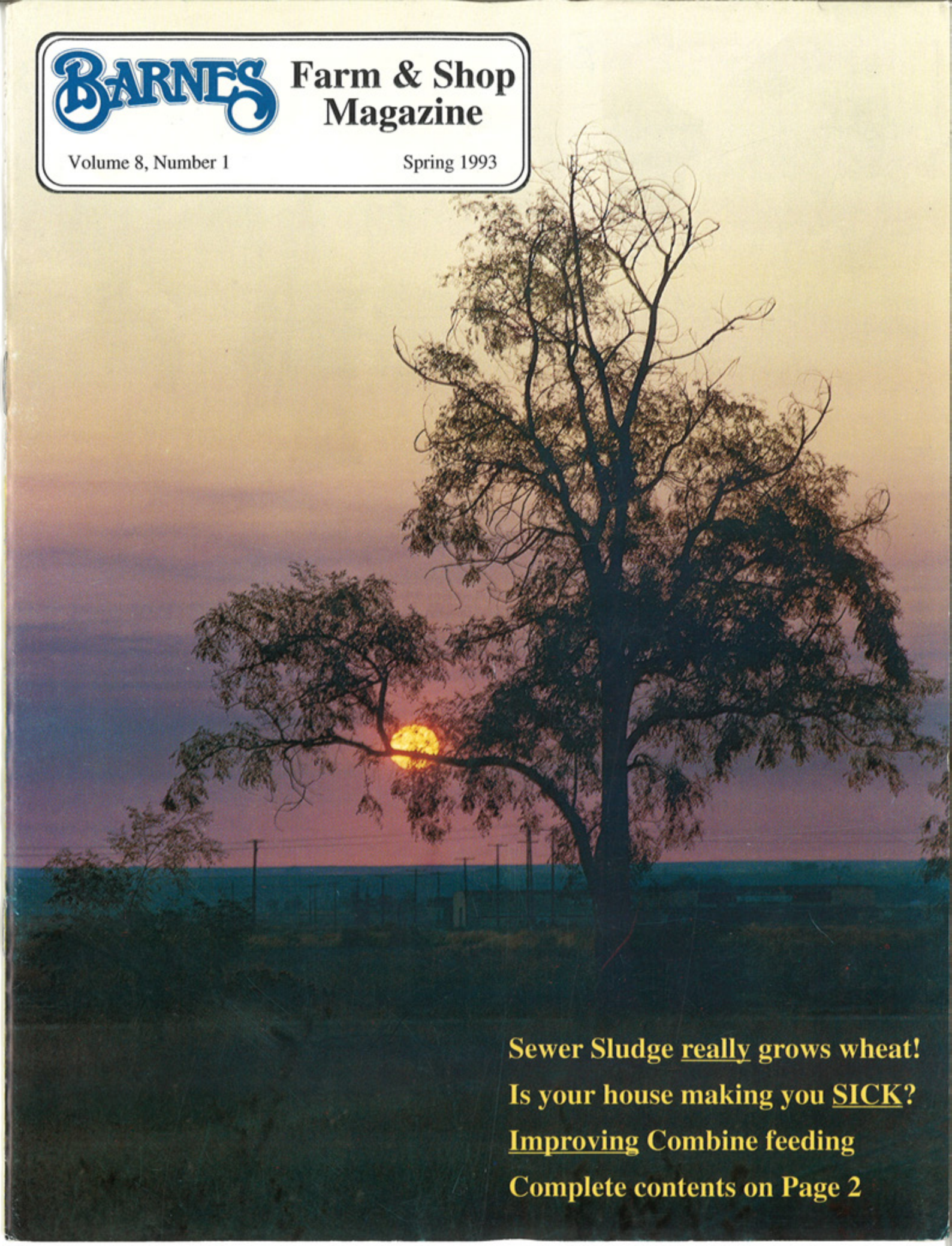
BARNES Farm & Shop Magazine

Volume 8, Number 1 Spring 1993



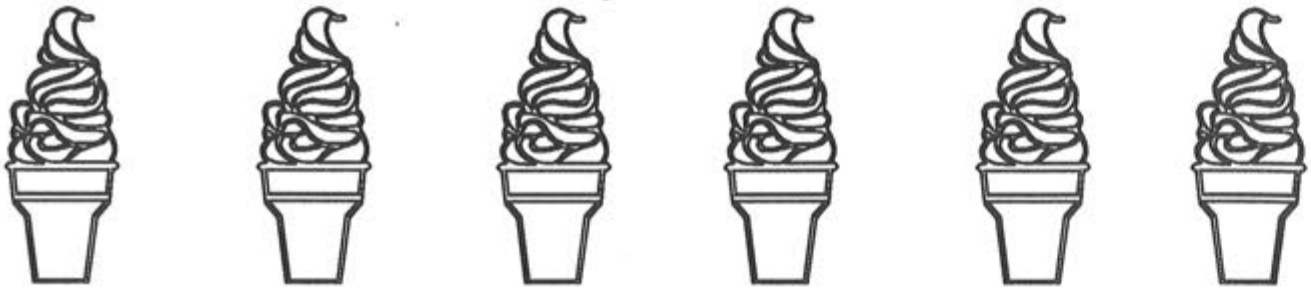
Sewer Sludge really grows wheat!

Is your house making you SICK?

Improving Combine feeding

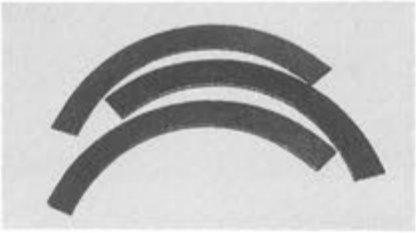
Complete contents on Page 2

Think of us as an Ice Cream Store for your Drills



offering MANY choices at prices that are hard to Lick!

Split Packer Repair Bands
in quantity $16.95

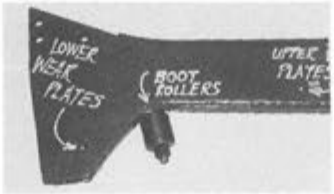


Taper Wheel Segments
in quantity $17.95

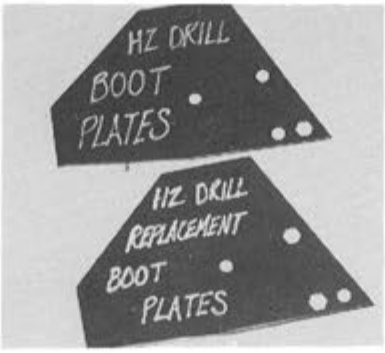
Modified LZ &
9000 Boot Points
installed on your points ..... $11.00 ea.

New Heavier HZ Boots
in quantity $225.00

Single Packer Repair Caps
in quantity ... $22.95 ea. wheel



HZ Boot Rollers
in quantity ..... $4.75 ea.



HZ Boot Repair Plates
in quantity ..... $12.50 ea.

BARNES
Welding & Machine

Waterville Industrial Air Park
(509) 745-8588

OXYGEN & ACETYLENE EQUIPMENT SAFETY TIPS:

When moving and transporting compressed gas cylinders around, never lift a cylinder by the cap! Reason: the neck ring on a cylinder is only swaged or peened on to the neck of the cylinder and could come loose because of rusting or force on the ring, then you could have an uncontrolled 3,000,000+ pound thrust rocket on your hands! We also want to stress the importance of making sure that all cylinders are always secured whether in use or stored.

Always use acetylene bottles in an upright position. The bottles are filled with a porous filler. This porous material holds liquid acetone that dissolves the acetylene gas at a high volume. If you allow the cylinders to be laid down in use, the acetylene saturated acetone will be forced into your regulator, hose and torch and will destroy the rubber parts in the equipment as well as releasing high volumes of the highly flammable acetylene gas. Another reminder: Never use acetylene gas at pressures higher than 15 pounds per square inch!

Never use oils, greases, lubrication, sealants solvents or adhesives on any cylinder or their related equipment at anytime. Even some teflon tapes have oils on them and should not be used by untrained operators. The reason we do not want these materials on cylinders, apparatus and fittings is because these substances react chemically with oxygen creating heat. Only 500 degrees . is required to ignite these materials or even cause a major explosion!

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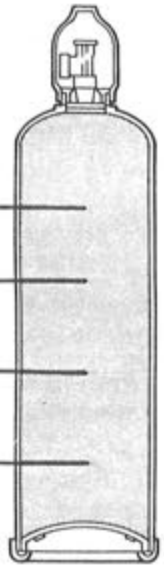
POROUS FILLER 8%to10%
The filler, which completely occupies the steel shell, is 90%to92% composed of millions of interconnected pores.

ACETONE 42%
Acetone equal to 42% of the internal volume is dispersed throughout the filler.

ACETYLENE GAS 36%
The acetylene gas is uniformly absorbed by the acetone. The resulting mixture occupies 78% of the internal volume.

RESERVE VOLUME AT 70%F 10%to12%
Since acetone and acetylene gas will expand as temperature rises, a safety reserve must be present even at 150%F.



Acetylene Cylinder Interior

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BARNES Farm & Shop Magazine

Farm & Shop Magazine

(509) 745-8588 P.O. Box 614, Waterville, WA 98858

Published by Dave Barnes
Typesetting & Layout by Connie Robins

Editorial Consultants Maryann Sprauer & Shirley Phillips
Circulation Director Shirley Phillips

Cover Picture Credits: Louie Leininger from Moses Lake receives all the credit possible! He has probably the best collection of farm, and outdoors pictures I have ever seen.

Louie was born in Lebanon, Pennsylvania in 1924 and lived there until WW ll. After the war, he came to the Wenatchee Valley in 1947. In 1952 he moved to Moses Lake where he resides now. Photography has always impressed him but he became really interested in 1950. Since then Louie has "probably taken a picture of every canyon there is, in Eastern Washington! He has displays in restaurants such as Don's Steak House in Soap Lake and The Chieftain in Wenatchee. This particular photo, he said, could be enlarged to at least 16 by 20 inches. For comments or help from Louie, please call 1-509-765-3337.

STOP Read this FIRST!

Weldon and Dave Barnes

Well, well, well! Barnes Farm & Shop News is in your mailbox once again! I bet you thought we completely forgot you. I thought I'd never get another one out!

This issue is full of fresh information, and sincere shop safety that is easy to over look when a person is busy. Make sure you read the Oxy-Acetylene Welding Tips. For real in depth information on safety, pickup Ed's shirt pocket book to carry around with you!

Rob and John Dewald, from Ritzville, came up with a very informative grain saving devise that works on the sieve of their combine. I've tried to explain it in some detail on how it works but, if I've missed something in this interpretation, they are very able to help clarify my story.

A special thanks to Gary Wegner from Reardan and Dan Sturgill from Metro of Seattle for their help and explicit detail for a better understanding of Bio Solids! All I've ever heard about Biosolids is the terrible smell! I'm impressed enough about the unlimited ways it enriches our soil that I'd love to put some on our farm land - I'm on the list but so is (it seems) everybody else!

On a more somber note! You may not know it, but we missed two years in the publishing of this magazine.

Those two years have gone by like two months in my life. I'd like to share with you what has happened to me and my family.

In this magazine you will find a story reprinted from the Douglas County Empire Press written by Nadra Rivers of Waterville. In this story is full details of formaldehyde poisoning. I'm printing it here with the desire to help someone else. You will notice where to get test kits, and who to talk to for further help.

We had this insulation pumped into our house in 1981. Our house was built in 1910 and was never insulated. We had no desire to tear off the outside walls nor even the plaster lath for that matter to put the glass insulation in our walls. This process seemed simple, would not do any damage to our house, it was fast, could be done in one day, and it was economical. A little over $1,000.00 would insulate us very well.

Well, soon after the process, our family became sick. Mainly headaches, sore and weak joints and many stomach aches! We went to every doctor we could find to see what was wrong! They all laughed at us and told us we were all fine! What actually transpired would turn out to be one of the most physical and mental stress events of our lives.

We spent the last year and a half completely rebuilding our house after we physically took out the formaldehyde insulation out of our walls. Our family did 90% of the work and every free moment I had was spent in the overhaul!

I had many things to say but did not have the time to put it on paper, but always had the desire to tell everyone what I had learned in our experiences in the past two years.

Well, here is our latest issue since 1990. We've got lots to tell you in this magazine. Our greatest desire is to share in the exchange of information. We hope that in someway this magazine will help the agricultural industry make the challenging farming process more profitable in the coming future.

I cannot thank my family enough for putting up with me and my long hours during the production of this magazine.

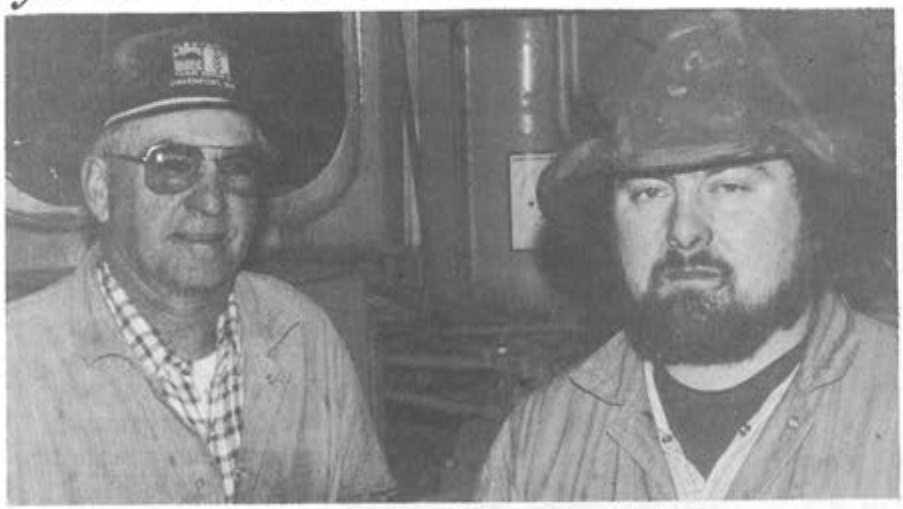
And as usual, many thanks to Dad (Weldon Barnes) for prodding me to finish this magazine and also for his experienced, understanding that only a dedicated father can offer!

Enjoy!

Dave Barnes

Dave Barnes

Sieve Modification to get the most out of your combine



John and Rob Dewald from Ritzville, WA.

The Dewalds became annoyed with their combine every time they cut on a side hill. The combine thrashes the wheat well, but because of side hills, would always sluff the wheat [allow the grain which is heavier than chaff, to fall to the low side of the sieve], and not clean the grain properly. This would amount to considerable grain loss as the grain would fall off the sieve with the chaff. Not wishing to lose more grain than necessary they decide to take steps to improve the efficiency of their combine.

Since their combine had a upper sieve that was not adjustable, they felt they could improve the operation of the sieve. What they figured they could do was to divert the wheat so that it would stay on the sieve longer and thus become cleaner and ultimately fall through the sieve into the clean grain auger and then into the bulk tank.

They managed to do this by installing five (5) vertical dividers which were five (5) inches tall and they pivoted at the very front of the sieve. On the rear of these dividers they were all connected by a control rod. This control rod was secured to the left side of the combine and was connected to a pendulum that always stayed vertical no matter where the combine was. When the combine would lean to the right the pendulum would also lean to the right and thus pull on the control rod. As it pulled on the control rod, it would pull all of the dividers up hill. In the process of pulling the dividers up hill this would incline the dividers and make the wheat/chaff stay on the sieve longer. This was accomplish by forcing the grain up hill against the normal flow of chaff. Conversely when the combine leans to the left the dividers would slide to the right or up hill. The overall travel of this apparatus is thirteen (13) inches. Which means from a level position the dividers would move 6 1/2 inches up hill.

On level ground with the combine running normally, Rob would manually move the pendulum one way or the other and John, standing directly behind the machine could feel the air blow to the left or to the right depending on which way Rob would move it. What this translates to, is distributing more air to go where the wheat is on the sieve, where, as on a normal sieve, the wheat would slide to the low side exposing more space for air to escape.

The greatest improvement

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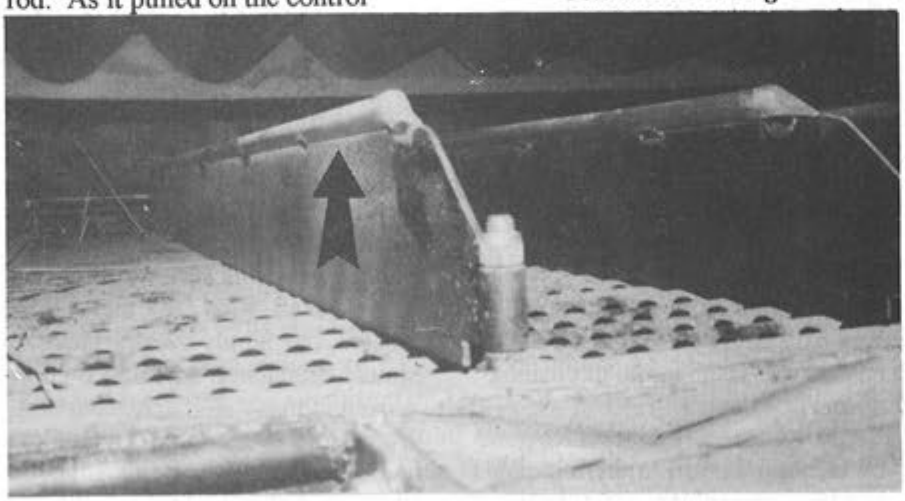

This shows the 5 inches tall dividers with the ½" steel conduit on top for re-enforcement. Arrow shows conduit.

IMPROVEMENTS FOR THE JOHN DEERE LZ & 9000 DRILL POINT

One of our customers came to us with the complaint that he was tired of always re-hardfacing the points for his drill and not gaining much for his efforts.

As you know, John Deere makes their points by stamping iron to the shape of the boot with a point at the end to make a groove in the soil so seed can fall in good moisture. These are held on to the boot by a bolt for easy and quick changing.

Hardfacing the point is a very good maintenance procedure, mainly because their is so little material to wear out [only one-quarter inch thick iron]. Hardfacing would be done upward from the point to the start of the lowest hole, or approximately two inches from the top of the point. This bead keeps the point on the iron and it also wears the point to a "vee" allowing the point to cut into the ground better. The next weld beads would be running from the very point to each corner on the bottom of the point itself, making sure the bead is on the leading front side edge of the point. This is where we need to make multiple passes adjacent to each weld bead to build up width and hardness.

In hardfacing, you need at least two passes on the top of each other to get the weld rod's published hardness.

Many people only use one layer on a part and wonder why it doesn't last as long as they think it should. The reason it doesn't is because that bead is not as hard as it could be. The first bead mixes with the parent metal and reduces the hardness of the hardface because the parent metal is much softer than the hardfacing we are applying. The second bead right on top mixes with the first bead which is much harder than the parent metal, making the second bead very hard. In most cases two beads are all that the welding rod manufacturer recommends.

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IMPROVING COMBINE FEEDING

A story about Platform Auger Hardfacing

Over the past few years, we have made recommendations on how to hardface a platform auger. The suggestions were genuine and worked well. Since then, however, auger design and speed have changed considerably.

We have found three factors that affect the way we make determinations on how to hardface your platform auger.

As we all know, there are not many hard and fast rules set in concrete for "rules of thumb" on combine tips, especially when it comes to auger hardface.

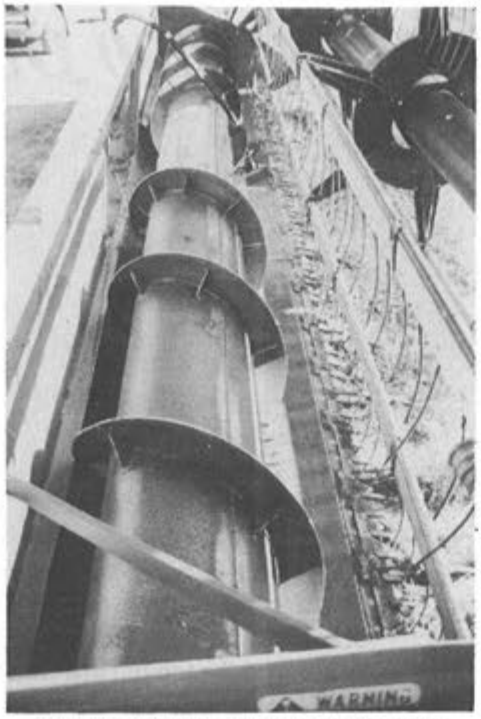
Allow me to try to explain what I've learned:

The first consideration is the diameter of the tube of your auger. Most common sizes use to be just 12" and 16" in diameter. Now there are augers with 14" diameter tubes also. We are concerned with sizes larger than 12"- hence 14" and 16" only.

The next deciding factor on platform augers is the speed at which the auger turns. If your auger turns faster than 150 RPM then we may be talking to you.

The way to determine speed is to either place a hand tach on the auger drive end while the combine is at "full" or operating speed and read the speed [RPM]. Most manuals will probably tell you what speed the auger turns. Remember, we are interested in speeds at or above 150 RPM.

The last substantial element in our quest for optimum performance is the existing pitch of the auger. The pitch of an auger is the adjacent spacing of the uprights of the flighting.



Picture of auger with greater flighting pitch [the distance between each wrap of metal]. Auger tube is 16", it turns faster than 150 R.P.M., and has new pitch. We hardfaced the top and leading edge with 200 mesh tungsten powder.

Manufacturing tolerances on any given flighting size would determine what the pitch would be: For example, if the outside diameter of the flighting is 6" then the pitch spacing would be 6" also. On a 24" auger [16" tube + 8" of flighting], the normal pitch would also be 24" apart.

This next part is what is very important! On your auger, if the pitch is greater than the diameter, then you fit this category. If yours is less then read related story on importance of pitch change.

Quick recap: Auger tube larger than 12" in diameter, auger turns faster than 150 RPM, and auger pitch is greater than its diameter.

In most normal circumstances, if your auger has any two or more of these factors, then we need to change our normal hardface practices.

In the past we use to preach hardface leading edge of flighting and grind a back-rake of 3 to 5 degrees on the top for super feeding. Also all we needed was hardface powder that had 50% or more Tungsten in its contents.

Now the whole concept has changed with what we have learned in the past 2 years.

This is what has worked for us in many different machines:

If you fit the above two out of three factors, you need to hardface the leading edge and also the very top of the flighting for best results.

As you probably know, it's very difficult to spray powder on irregular, thin surfaces. Therefore the top surface to be hardfaced needs to be of maximum thickness and very flat. After hardfacing, correctly, no grinding is necessary. Another thing we have learned is that not just any Tungsten powder will work!

We are now using a powder that comprises of 200 mesh Tungsten in a nickel, chrome matrix. Mesh is the size of the particle. Since tungsten cannot be welded, it is fused to the base metal by the nickel chrome particles. In other words, we are soldering the tungsten to the metal with nickel and chrome.

Please understand that the hardface powder makes as much difference as the other three factors I've talked about.

If you fit this category and

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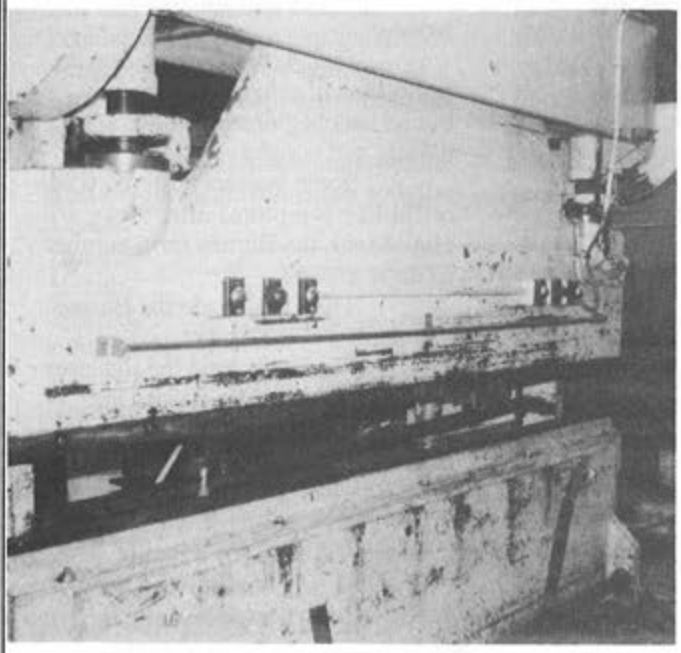
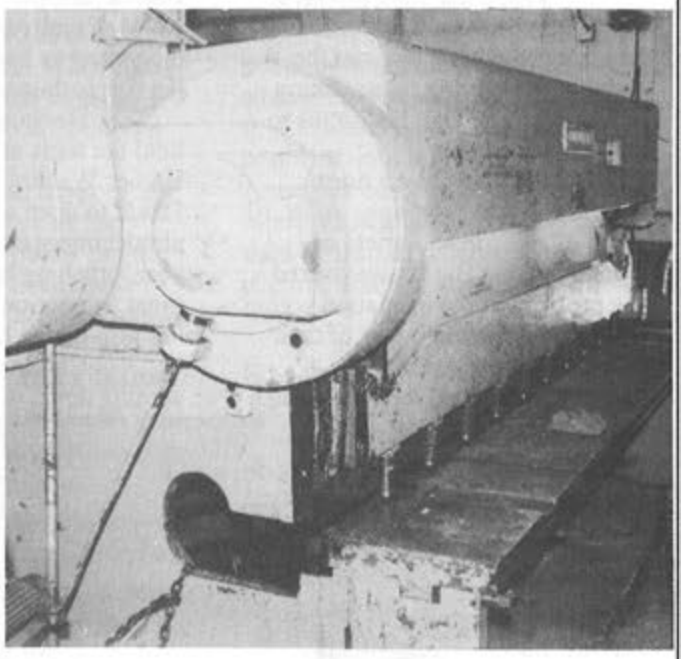
Custom Metal Forming

PLATE PROCESSING



EXPANDED SHEARING CAPACITY



Some common products from our machines:

- Header Bottoms
- Rock Guards
- Decorative Aluminum Forming
- Feeder House Tins
- Tool Boxes
- Truck Bed Components
  (stringers, side rails, etc.)
- ATV Ramps
- Truck Frame Channels
- Grain Chutes

BARNES
Welding & Machine

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Is your house making you SICK?

Formaldehyde Can Be Deadly

by Nadra Rivers

Ten years of illness, and all because of foam insulation.

That's the story of David and Kathy Barnes, Waterville residents who have torn out the walls of their living room, dining room and their boys' bedrooms to cure their illnesses.

It sounds like a drastic solution, but it's working. After 10 years of suffering a variety of symptoms, the Barnes uncovered the problem in the insulation within the walls in the main part of their home.

Kathy said the house was "making us sick."

Now, she said, the family is beginning to be really healthy, but it took a long time and a good bit of sleuthing to bring that about.

This picture shows 2 Factors: 1. The extensive shrinkage in the wall cavity of the foam you can see by the edges of the triangular foam piece, how it is pulled away from the wall studs. 2. The areas that are easily missed when we had the foam pumped in is obvious by he open triangle.

While being interviewed by a reporter, Kathy noticed the ring on her finger was loose. She was elated, as it was the first time in over three years that it could be slipped over a knuckle. Swelling was gone in both hers and David's hands.

Since the foam insulation was installed, they and their children suffered from sore throats, nasal irritation, constant cold-like symptoms, listlessness, sinus infections, headaches, nausea, arthritis and even depression.

Kathy would go to bed every night with nausea, even to the point of vomiting. David suffered from arthritis symptoms that eventually became so bad he found it difficult even to get up or down from a "creeper" he used for working under trucks. He was diagnosed as having arthritis the day his son Joshua was born.

He found it hard just to hold the tools at his business, Barnes Welding. For Kathy or David to open a jar of ketchup was almost impossible. During the last year, brushing her hair caused Kathy great frustration, as she would lose her grip on the brush.

Children always seem to be coming down with something. But for the Barnes children, it was real.

Joshua, now 10, had constant ear infections that progressed to migraine headaches. Three years ago, Kathy said, his headaches came in two-week spans. It was so painful he would spend three hours several times a week just lying on the couch. He was visually tested for a brain tumor and diagnosed as fine, but the headaches persisted.

Kathy said Jason, 8, constantly sniffled. "It drove me crazy," she said. "I asked if it didn't bother the class or teachers at school. The teachers hadn't noticed - he was not sniffling at school."

That made the Barnes wonder.

Joel, 4, didn't share drastic symptoms of others in the family, but he was beginning to have sore throats and coughs.

Some visitors suffered cold or flu-like symptoms after they stayed with the Barnes for a number of days.

That, too, made the Barnes wonder.

But Kathy said the illnesses baffled doctors. The Barnes ate well, took vitamins and had regular bedtimes for the boys.

Things began to come together when they left for a family Thanksgiving vacation with Kathy's folks in Vancouver last year. The kids wanted to go swimming. Kathy said no because of their colds. When they asked again the next day, she started to refuse but noticed they weren't sniffling anymore.

She remembered reading in the Douglas County Empire Press about the publisher's mother, Oma Robins, having had some of the same symptoms that were finally traced to formaldehyde poisoning.

The Barnes returned home after Thanksgiving and their symptoms returned in a matter of hours. Kathy reread the paper.

"Your paper really got me going," she said.

Then began the quest for answers. The series of stories, written by Gloria Anderson in October of 1990, described formaldehyde problems of the Robins and others. The articles went on to explain the procedures they used to

get rid of the gas - releasing formaldehyde, which is often used in processing building materials and fabrics.

Ken and Oma Robins lived in a new home in East Wenatchee. She had been having medical problems that cleared up greatly when she went to live with one of her children and kept away from her home.

John Garmany, microbiologist and medical technician with the Chelan-Douglas Health District, referred the Robins to a Tacoma lab that eventually neutralized the formaldehyde gas in their home. Walls were injected with a strong ammonia and the home vacated for 48 hours.

WHERE TO GO FOR HELP!

COMMERCIAL ENVIRONMENTAL SERVICES, INC.

West 222 Mission Suite 110, Spokane, WA 99201. (509) 327-6708. Talk to Ken Wilder or Dan Autrey.

1 kit contains 2 formaldehyde tests, Lab processing and mailing costs. $55.00

At a distance it is easy to see how many areas that were not insulated. Removal of the foam after the inner walls were off was easy. The foam came out in rigid chunks.

David learned that formaldehyde creates a reaction between the resin and the foaming agent in the insulation. It is also used in many other commonly used materials such as permanent-press fabric, carpets, some particle boards, flooring, paneling and linoleum.

David contacted Garmany, who had since retired. When Kathy related their symptoms he said, "Bingo, no doubt about it."

After an environmental check of the house, Garmany put the Barnes in touch with Commercial Environmental Services, Inc., in Spokane. Test kits from CES indicated a rather high concentration of formaldehyde in their home.

Ken Wilder of CES told the Empire Press his firm does a lot of testing for pollution from various sources in homes, offices and commercial buildings. Formaldehyde is just one.

There are indications about 20 percent of the population is sensitive to something in the environment, Wilder added, and the number seems to be growing.

By now David and Kathy are super-sensitized to formaldehyde gas. When someone becomes sensitized to such a degree, other substances can bring on the same symptoms.

Kathy, for instance, has become very sensitive to a sugar substitute. That became apparent when she has a reaction that sent her to the hospital unable to breathe. A couple in Peshastin who have the same formaldehyde sensitivity clued the Barnes into the problems of associated sensitivity.

A humorous side of the Barnes' ordeal has been the yellow jackets that built nests upstairs in the insulation. They would walk downstairs, listless. Unable to sting or even fly, they acted drunk and would pass out, David said.

Wilder said neutralizing a home with ammonia requires a strong, 26 percent concentration of it. Residents have to vacate the premises until it is cleared out. Ammonia can also be very corrosive to metals in a home. It has to be used by trained personnel and with caution, and still doesn't always work.

In his search of answers, David contacted Bennet Lab in Tacoma. Staff members there were a big help, he said. They told him about the National Research Council Canada, which he said "wrote the book" about formaldehyde.

Normally, any fumes from formaldehyde insulation should dissipate within six months.

When off-gassing persists for years, David found, the insulation may have been poorly applied in unsuitable weather conditions. Or it may be incompatible with other building materials or have a component chemical that was beyond its shelf life.

Wood heat can be another contributing factor to off-gassing, David said. High heat seems to cause an increase in gas dissipation. High humidity can, too, although it's not a particular problem in Waterville.

In winter the Barnes heat with wood, primarily, which gives off more heat than some other sources. The plaster lath in the walls would allow air from the outside to be drawn into the interior, as plaster is quite porous. The family also found an extreme shrinkage and deterioration of the foam.

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HZ DRILL BOOTS-NOTHING NEW, JUST BETTER !

Due to the outrageous price increases on standard HZ Drill Boots, and overwhelming requests for boot side plate repair, we decided to offer brand new stronger boots at substantial savings to dealer prices. The new boots look the same as the old ones, they are even the same color! In fact, side by side you cannot tell the new ones apart from the old ones!

It's what's inside that counts!

We've used alloy bars that are cold drawn to give additional strength for the main structural frame work. In doing so we have maintained the original streamlined shape of the boot, also this enables the seed to flow freely down the boot to be placed accurately in the ground, the way we have grown to expect from John Deere.

The cover plates are .015 [inches] thicker on each side adding about 15% more strength. This resists bending while in turns or with use of fertilizer when seeding.

In the shop we offer boot straightening, from contact with rocks or use of long fertilizer points. We also offer complete side plate replacements due to excessive wear from the ground contact or rubbing of boot on the side of packers.

These services have kept us quite busy in the past, and we wish that not to change, however, we also would like the farmer to have more choices available to him to help him make cost effective maintenance decisions.

So now he can choose

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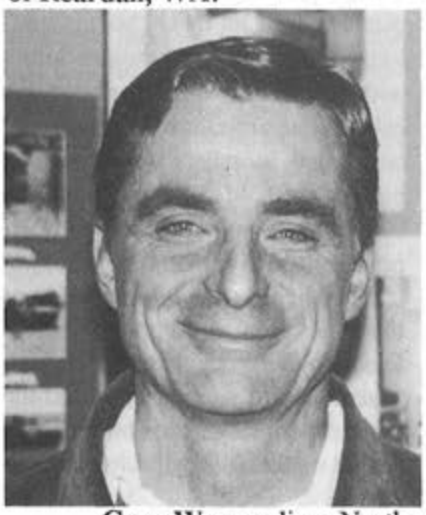
Sludge from Cities and Town Sewers helps Wheat GROW in Eastern Washington

A Interview with Gary Wegner of Reardan, WA:



Gary Wegner lives Northwest of Reardan Wa. and farms 1525 acres of dryland wheat, barley and canola. This past year he raised Meltan Barley, a variety from Sweden. He produced three varieties of wheat: Lewjain [soft white common], Quantum 542 [Hard Red Winter Hybrid], and Hyak [club wheat]. Gary also grows spring canola for Intermountain Canola. His farm is in the Banana Belt of the North West, receiving 12 to 15 inches of annual rainfall. His average crop yield for wheat is 50 bu. per acre and consistently raises one and one-half tons of barley per acre with the addition of Sludge which, when it is processed is called Biosolids.

WHAT MADE YOU TRY THIS PRODUCT?

In 1980, I read a story in Readers Digest about Biosolids that was used on trees in the Seattle area. There was substantial growth improvement with only one application. I remembered the story. Especially the picture with a cross section of a tree showing the growth rings and the doubling of the growth rate of the tree. I said to myself that this is great stuff! But it doesn't apply to me! Then in 1986 the Capitol Press ran a story on Spokane's sludge program where they were going to farmland: They told how well it was working in the Deer Park area. There was an address for inquiries and the very next morning my letter was in the mail! In the spring of 1988, we made our first application.

WHY DO YOU CALL SLUDGE, BIOSOLIDS?

Biosolids, is the nationally recognized name for municipal wastewater sludge that meets all of EPA's requirements for agricultural land application. EPA has very stringent requirements.

HOW DOES A WASTE WATER TREATMENT PLANT WORK?

A treatment plant is really an accelerated swamp. There are two biological processes that are used. The first one is Aerobic Digestion. In this process, air is pumped into the raw solution and stirred to mix as much as possible. This enhances the ability of the natural bacteria to work faster and digests the nutrients in the water. Aerobic Digestion reduces the solids volume by about half. [50%].

The next step is Anaerobic Digestion. This is where they concentrate the solids and put the solids in large sealed tanks [to keep the air out]. These tanks are heated to approximately 100 degrees. [optimum temperature for these natural bacteria to work.] From this process, methane gas is produced and collected for use as fuel [swamp gas]. This process reduces the volume of solids by one-half again, so that we end up with only 25% of the original volume of solids.

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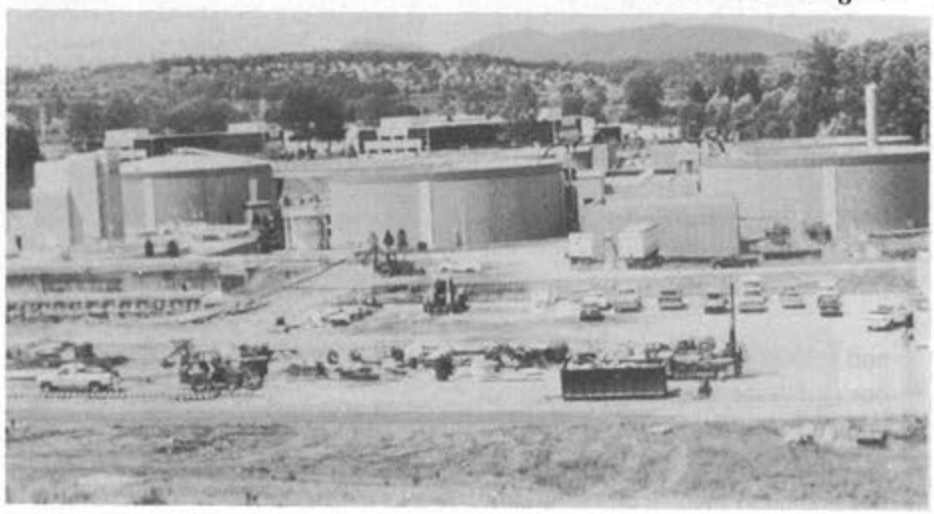


Bird's Eye view of Metro of Seattle in Renton, WA. The large structures are the digester tanks.

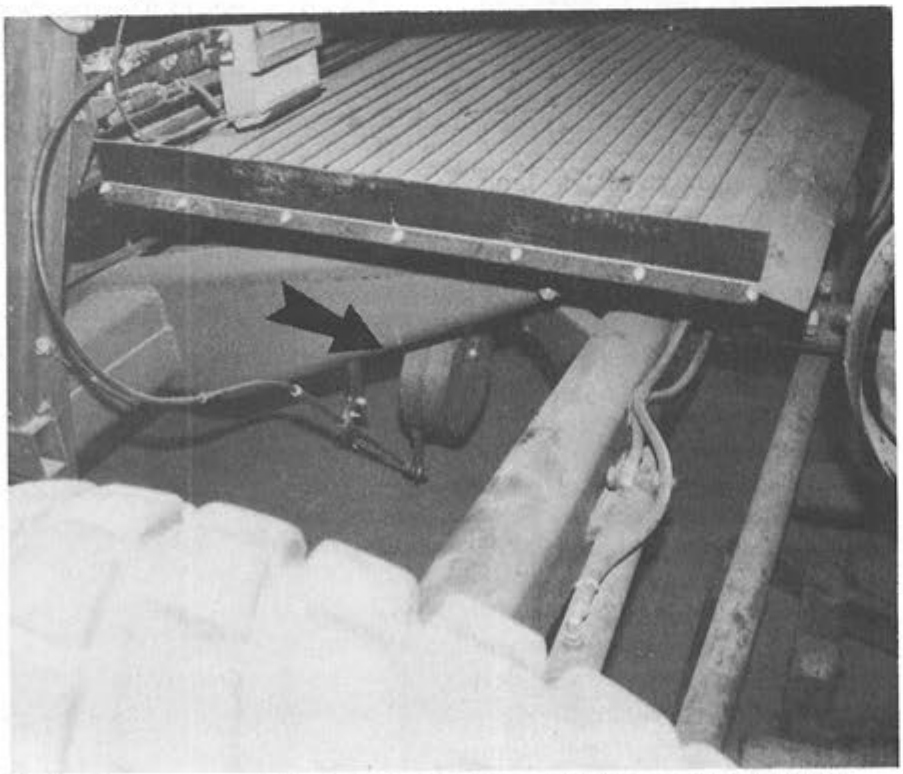
Sieve Modification
Continued from Page 4

they noted was in grain loss. On the side hill with a normal sieve all the grain would go to the low side leaving a trail of wheat on the low side of the combine. Now the wheat is forced upward spending more time on the sieve.

Installing the divider assembly on a fixed sieve [non adjustable] you need to allow approximately a sixteenth of an inch clearance between top of sieve and bottom of divider. John used a one eighth by five inch steel flat bar and cut it the length of the sieve [varies with each combine] then he used one half inch steel conduit and welded it to the top lip of the divider going the full length. At the front of the divider they made the hinge system which consisted of a piece of pipe five (5) inches long. They then welded this piece to the end of the divider. Next they made the front hinge assembly which was flat bar with five (5) pins welded equal distance of the width of the sieve. These pins were one half inch in diameter and six (6) inches long. This assembly took up about two inches of the front end of the sieve. This assembly was than bolted to the sieve for easy removal. On the back end of each divider was a clevis. They made a flat bar that would pin each divider together in a row. This bar was mounted close to the sieve so it would slide left and right and still have the added support of the sieve. At the end of this flat bar they hooked a power takeoff cable which was then was hooked to the pendulum for left and right movement. The pendulum consisted of two (2) 20 pound combine weights secured to a hinged bar. The reason for the heavy weight is because full deflection has to occur within eighteen (18) inches from the sieve. [We still need ground clearance]. The PTO cable is tied to the very bottom of the pendulum with the weights directly above the cable. The amount of pivot is controlled by where you hook the base of the cable on the pendulum. Example: Being at the very lowest point would give you the most travel where as the highest point on the pendulum would give you the least. When they were done, this assembly was so well built that the slightest angles of the combine would made all the dividers move easily.

What was interesting, Rob noted, when they bought the combine it came with seven (7) inch dividers already installed on the sieve. And this revision cut the grain loss down by at least half.

The flat bar that ties the vertical dividers together is at the lower part of the picture. Notice the PTO Cable connecting to this flat bar. Arrow points to the cable.



Notice the arrow pointing to the pendulum with the combine weights which is hooked to the lower end of the PTO Cable.

OXYGEN & ACETYLENE EQUIPMENT SAFETY TIPS:

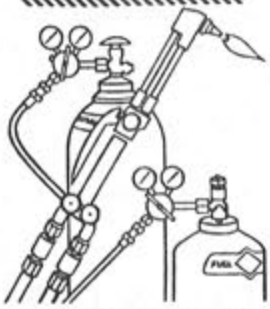
Continued from Page 1

It is highly recommended that all torch outfits have reverse-flow, check-valves between the torch and hose. It is also suggested that a set be installed between the hose and regulator. The main purpose of these devices is to prevent the improper mixtures of oxygen and fuel gases in the hoses where they could be chemically ignited or be caused to ignite by backfires or flashbacks.

Another worthy safety precaution is to make sure that you "back off" or release the adjusting screw of your regulator every time that you close your cylinder valves. The sudden burst of pressure that is released when you reopen the valve again could enter the pressure control diaphragm chamber area because of dirt or malfunction and cause the adjusting screw to shoot out of the regulator body at the speed of a 45 caliber bullet!. In this respect, make sure that you stand on the opposite side of the cylinder from the regulator when you are opening the valve to insure that any explosions ate directed away from your body.

For more clarification or technical information, please contact Ed Hamal of CISCO SAFETY, INC. , P. O. BOX 111, VANCOUVER, WA. 98666 or call 206-696-0604.

KWIK-SHOTS ON CYLINDER AND GAS APPARATUS SAFETY



To learn how to properly light your torch, or to learn what really causes your torch to backfire while welding, get your personal copy of "Welding Safety Tips" call (509) 745-8588.

Sludge Helps Wheat Grow
Continued from Page 11

Then the product is "squeezed" using a belt press, to remove as much water as possible. The biosolids are now about the consistency of wet dirt [yet they still contain 80% water]. This is weighed as a "wet ton". 5 wet tons equal 1 dry ton. More on this later.

HOW DO WE AS FARMERS RECEIVE AND HANDLE THE BIOSOLIDS?

The product is delivered to the farm by semi-trucks. At the field the truck dumps their load into a pile and then head back to pick up another load. In the field a loader is used to load the material into conventional manure spreaders that apply the biosolids to the field in an organized manner. A normal application of biosolids on my farm is four and one-half dry tons per acre. That is equal to the thickness of twelve sheets of typing paper, spread over the surface of an acre.

HOW CAN BIOSOLIDS HELP FARMERS WITH THEIR FUTURE CROPS?

Biosolids have many advantages. Basically, biosolids contain every essential plant nutrient in a "balanced package". In addition to nitrogen, biosolids can replace some of the macro and micro nutrients that have been "harvested" from our land over the past years of cultivation. Elements such as phosphorous, sulfur, zinc, copper, and potassium are very important to wheat production. These nutrients enhance plant growth which produces more residue which makes more organic matter. And since organic matter is the "glue" that holds soil particles together, all of these factors help prevent erosion of our soil.

Summer fallow after the application of 4 dry tons of biosolids done in May 1992 on Gary Poole's farm. What you see is equivalent to the thickness of 10 sheets of paper.

Notice the obvious increase in plant development with the plant on the left. The small plant was fertilized conventionally with 40 lbs. of N and 8 lbs. of sulfur.

DID YOU SEE ANY ADVANTAGES IN USING BIOSOLIDS FOR YOUR CROP YIELDS?

Along with the increased yield with my wheat and barley was the increased plant growth. For example, in one barley field that was fertilized with normal fertilizer, the barley close to a draw had 5 tillers from one seed where as another seed in the bio field that was close to a draw yielded 12 tillers. The plant was about 6 inches taller and considerably heavier in the bio field. The barley also headed out 10 days earlier. The normal fertilized field yielded 1.3 tons per acre, and the field with biosolids netted 1.9 tons per acre.

IS THERE PLENTY OF PRODUCT AND HOW DO WE GET THIS FOR OUR FARMS?

The biggest problem with biosolids is the limited supply. If all of the biosolids in the state were

used on wheat farms, there would only be enough for about 10,000 to 12,000 acres per year. That isn't very much in a state where we have almost two million acres of wheat land.

If you are interested, I would suggest you call the Northwest Biosolids Management Cooperative. Their number is 1-206-684-2031.

Dan Sturgill is employed with Metro of Seattle, his position is Insuring Quality Control in the production, application and delivery of biosolids to the end user. (Forestry, wheatland).

Dan has been with Metro for 20 years which includes work with the environmental lab there. While at the lab he would analyze and monitor all aspects of biosolids and soils, along with marine water to sediments and marine organisms. He also directed field and lab staff doing research involving biosolids.

He has been involved with project management for silviculture, and is currently involved with agricultural land application in eastern Washington.

Dan points out, the product that is generated in the State of Washington, the final end user breakdown would be as follows:

65% is used for soil improvements, this is the Biosolids that we are talking about here and is what our farmers would use on their land.

13% is incinerated, burned for alternative fuel source, such as in the generation of electricity.

12% is involved in silvicultural, application to the roots of the trees in the forest which takes place mainly in Western Washington.

10% would be used for composting, biosolids is mixed with wood chips and other organic material and used for home owners land, such as parks, gardens and greenhouses.

For more specific technical questions regarding Metro or biosolids and its applications or site locations, feel free to call me at (206) 684-1242.

Mechanical application of Biosolids at 7 m.p.h. one of these loads will cover a 1\2 acre 12 foot wide. Bear in mind this is 80% water.

HZ DRILL TIPS:

A. Spacing between packers: Two and three eights inches is ideal, however, two and one half is the maximum that you would want to space them out. Whereas two and one eighth would be the minimum to pull the packer halves together.

B. In order to install boot rollers on the boot , the very minimum a person should have their packers spaced would be two inches. The purpose of the rollers is to reduce the side wear of the boot and to insure greater longevity of the sides of the H Z packer. A very wise and inexpensive investment to your drill.

C. When respacing your own packers on their axles,.you must use the correct tubing for keeping the packers and axles tight. The tubing needs to be at least .160 wall thickness and should fit the drill axle very snugly. [Like a ducks' toot in a mud hole.] Note: Do not use split tubing on any drill, at any time, or for any reason!

Continued on Page 22

Larry Glessner of Mansfield WA. "What I like the best about biosolids on my farm is that, this fertilizer in organic form, with one application I can begin to replace some Humus that is definitely lacking in my soil. We are also able to, in that same application, replace nutrients and micro nutrients cost effectively than we would have otherwise.

Larry lives two and one half miles west of Mansfield and farms 2000 acres on a summer fallow/crop rotation consisting mainly of winter wheat. His land is in a rainfall area of 10-12 inches of annual rainfall.

After soil tests, we were allowed to apply our material on the ground at a rate of four and one half to five tons per acre, which is equal to about the thickness of 12 sheets of paper.

This application was put on 250 acres in the spring of 1992. In the fall of 1992 I seeded the ground to winter wheat [Edwall]. Going into the winter the wheat on this field showed quite noticeable growth and color improvements over our other fields that were conventionally fertilized.

Gary farms 11 miles N.W. of Mansfield, Wa. in a rainfall area of 10 to 11 inches. On his 3400 acre ranch he grows wheat in a summer-fallow, wheat rotational basis.

Leroy Thomsen feels that one of the greatest and most encouraging aspects of using biosolids on his farm is the real potential that he has to revitalize his marginal soils. Especially his rocky and thin soils. "Whereas our normal application of fertilizer either by Anhydrous before crop or Anhydrous and trace elements with our drills, would not be cost effective."

Biosolids also gave me an increase in root development in our spring re-crop in 1992. I have easily seen 40 to 50% increase in root growth and size in comparison with our normal Anhydrous fertilizer application.

This last spring we saw a 3 to 4 bu. yield increase versus a field with 40 lbs. of N and 10 Lbs. of Sulfur on Gary Poole's test plot.

Leroy farms 2300 acres N. W. of Mansfield Wa. in Douglas county. He is subject to 10 to 12 inches of annual rainfall. He raises winter wheat [Sprauge, and Eltan], on a rotational, summer fallow basis. He raised Mondia Oats on the spring re-crop fields.

Twist Drill Tips:

Rapid wearing away of the extreme outer corners of the cutting edges indicates that the speed (RPM) is too high.

It is bad practice to plunge a drill bit into cold water after the point has been heated in grinding [sharpening]. The sharpening process is incorrect if the drill bit gets hot in the first place. The small checks or cracks resulting from this procedure will eventually chip out and cause rapid wear or breakage.

Insufficient speed in drilling small holes with hand feed greatly increases the risk of breakage, especially at the moment the drill is breaking through the far side of the work. This is due to the operators inability to gauge the feed when the drill is running too slowly. [This is why we keep the speed (RPM) higher on small holes.] Small drill bits do not remove chips as readily as large drill bits because of the thicker web on the smaller bits. This

From Carbide to Gold-Plated and Points Between:
Getting the Most From Your Twist Drill

Technology has given us many advances and drill bits are no exception. In today's market there are many "special" drill bits. There are carbide tipped ones that will drill anything for a very high initial investment; there are those that come in a fancy box plated with some gold coloring and supposed to drill "just about anything," you can even get bits colored silver, blue or black! To add to the confusion, consider all the drill point angle choices or even the angle of the helix [spiral] of the bit itself.

In the past, when buying drills, I just asked for a bit to drill steel. Taking a chance that what I was getting would do the job adequately and economically [Number of holes before failure].

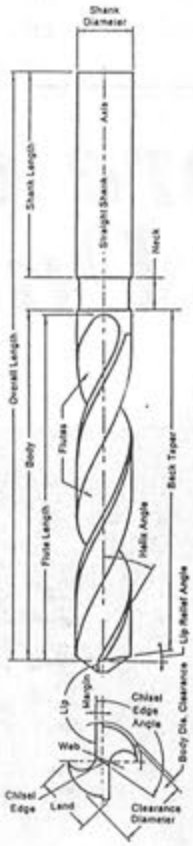
Maybe I needed to drill a piece of mild steel for a part and then with the same bit put a few holes in a piece of alloy steel [Spring steel].

After I'd pick up my bit from the supplier, I would always wonder why it either broke, got dull very fast, or just wouldn't drill what I needed to drill.

Hopefully, I can give you some information to help in your next drill bit set purchase. I'll refer to the bits you've seen at the Ag Expo in Spokane the past 2 years and are the same ones we offer you today.

Our drills, at Barnes Welding, are American made, very high quality, industrial twist drill bits. These drill bits have gone thru many rigid quality control inspections to ensure high quality and reliable performance for a wide variety of drilling tasks.

I would like to go into more depth on the manufacturing of drill bits. All high speed steel drill bits are made from M-1 to M-10 steel and our bits are all M-1 HSS [High Speed Steel]. High carbon steel was the first steel to be used for bits and is still used today. These are inexpensive to manufacture and are still suitable for drilling mild steel at very slow spindle [RPM] speeds. High speed steel [HSS], is used for higher surface speed and also for drilling harder material than basic mild steel. When shopping for drills, it seems, all manufacturers offer M-1 or M-2 HSS bits; these are minimum requirements for a drill. The key to a good bit is the result of heat treatment to the bit itself after machining.



Heat treating raises the surface and core hardness of the drill considerably. Remember, the drill needs to be harder than the object you are drilling otherwise it will dull very quickly. Bits are available with a Rockwell C of 35 on the low end of the scale to a high of Rc of 66.

National standards say they need to be Rc of 63 to 66 hardness.

How hard is hard? Here are some simple comparisons of Rockwell hardness on the "c" scale. Your claw hammer head, most likely, would be Rc of 30. If you bought a hardened flat washer it too would be about Rc 30. A Grade 8 bolt would have a surface hardness of Rc 34. Good quality chrome hardfacing would be from Rc 59 to 65 after two weld passes. A typical roller bearing race that you would install into any

Continued on Page 20

Twist Drill Tips
Continued from Page 16

heavier web is designed into the smaller bits to increase the rigidity. This is also why higher speed and lighter feed pressure is used on small drill bits.

When drilling deep holes more than 3 times the diameter of the drill bit, it is advisable to withdraw the bit at intervals to remove the chips and permit the drill tip to cool. [Coolant to reach the tip of the drill.] Speeds and feed rates should be decreased!

If your drill breaks for some unknown reason, this is what might have happened: The point is improperly ground or possibly too heavy feed pressure. Maybe there is some backlash in your drill press allowing the drill to move up and down [vertically]. Flutes could be clogged with chips or it could just be a dull bit.

A drill bit will drill over size when: You have hand sharpened it and the angle on each flute is not equal or the length of each cutting edge is not equal or both. Even a loose spindle in your drill press will allow you to drill oversize. One good way to tell if you've ground the bit correctly is to notice the chips coming from the bit; both chips should be curled about the same and both should be the same size, if they are, then you've done a good job sharpening your bit.

When portable hand

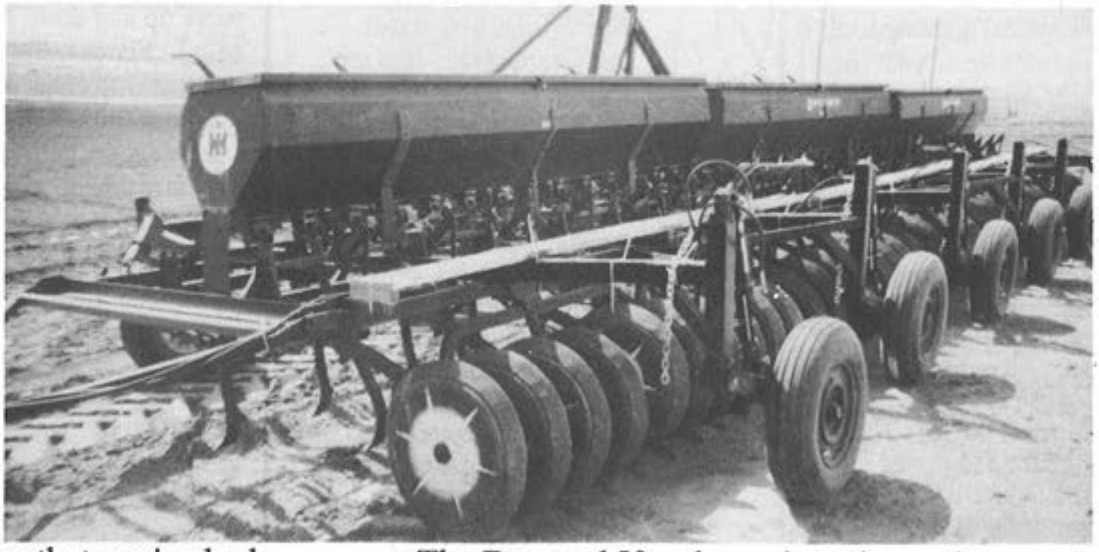
Continued on Page 20

Hi, I'm Chris Wright, when you call and talk to me I'll be the one that makes sure that your job is done in a timely basis. I have been working for Barnes Welding for 10 years and have performed all aspects of welding, repair and design.

Hi, I'm Weldon Barnes, they give me credit for being the chief here, but I really enjoy solving complex design problems. I am very fascinated with all aspects of heat shrinking iron. If I can offer any assistance please feel free to call.

Hi, I'm Al Akers, you'll be talking and working with me if your problem is drill packer related. I've been with Barnes Welding for 4 years and have repaired several thousands packers. I'd be glad to talk with you anytime you have any questions.

To Get More Out Of These Units,



Now that you've had the good since to put IH 150 Drills on the farm, may we suggest a sensible up date to add to the performance of your drills!

The Barnes 150 axle Bearing Kit. The essential revision required for maximum seed emergence!

Keeping packers directly behind the boots has always been a challenge. Now these new bearings are designed to fit the original hole pattern exactly and eliminate any left-right movement in the

Hi, I'm Tom Sherwood, I want to do my best to help you in any way. Whether it be rebuilding a header, or an auger, or even forming header bottoms or rock guards on our metal brake. I enjoy all phases of HZ boot repair and rebuilding

Hi, I'm Geri Creel, when you call most often I am the one you will talk to. If you have any questions on pricing, or specific questions on your bill I can help. Don't just call, come see us, you will be amazed what we can do for you.

FOR SALE

1965 Ford 1 Ton cab and chassis, rebuilt rear end, 390 V-8, all good tires, 4 speed, good condition $1,500.00

12 Foot All Metal 1 Ton bed with boxes $350.00

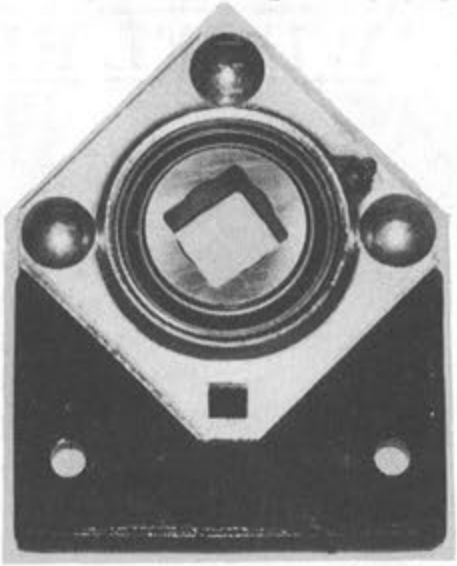
1951 Ford F-700 cab and chassis with 390 V-8, 5/2 speed $550.00

1934 Caterpillar 50 Crawler Tractor, runs good. Make offer.

Brown & Sharpe No. 3, horizontal mill, quick change gear box 48x15 inch table, powered knee. . . . $1,900.00

745-8588
Ask for Dave!

You Need This Unit!



packer axle.

Consider these additional features at no additional cost. **Triple Lip Seals; Case Hardened bearing balls; regreasable bearing housings; Direct Fit:**

For more information on how to get your own, easy to install bearings for your IH Drills Call:

BARNES Welding & Machine

Waterville Industrial Air Park
(509) 745-8588

Getting the most out of your Drill
Continued from Page 17

implement wheel would be very hard. It's surface would be at least Rc of 80 or higher. If you bought a un-chromed socket for your tool box, plan on it to be around Rc 40 to 45.

When heat treating, 75% of the drills' length is treated to the maximum hardness. The shank or 25% of the drills' length is reduced in hardness to Rc of 35 to 40 to allow the drill chuck to grip the drill. Suggestion: When tightening the chuck around the drill bit, make sure to tighten all three holes of the chuck to insure adequate tightness to avoid bits slipping. Most people usually tighten only one hole of the chuck and this leads to slippage and grooving of the drill shank.

When buying drill bits or bit sets, pay careful attention to drill bit angles. The most common is the 118 degree point. This point is good for most drilling operations. We now have available a 135 degree split point drill. The one we stock and sell is the Jobber Heavy Duty drill bit with a 135 degree split point. This point develops less heat than the 118 degree point and it won't walk or wander on most surfaces. Drilling on a round surface such as a bolt, can be started even without a center punch hole. Another advantage is that a pilot hole is eliminated. The split point, only takes 60% of the pressure on the bit to drill, compared to the 118 degree point jobber bit. This is a real benefit in field, portable and hand drilling.

When you, go to your supplier for a drill bit, all you are concerned about is getting a good bit. Good meaning; "sell them a HSS bit." Now we need to consider the grade of the HSS. We have already discussed M-1 to M-10 steel; The one thing nobody asked about or anyone offered to us is the result of case hardening. As we have mentioned "hardness" makes all the difference in the world and no, you can not look at the "black bit", and see how hard it is! This information must come from the manufacturer. Ours is a minimum of Rc 63 up to Rc 66. Some of our mail order competitors offer M-1 or M-2 bits at substantial savings, but they can not drill the same material that we can drill.

Theirs seem to dull sooner, telling us that the heat treatment was not adequate or comparable to our national standards drill bit.

Barnes Welding, and our supplier, wish to offer the highest quality drill bits to our customers at the most reasonable prices possible. As always, customer satisfaction is guaranteed.

Twist Drill Tips:
Continued from Page 17

drilling, screw machine length drill bits are often used. Because of their shorter length, they are more rigid and subject to less breakage.

Rule of thumb for gauging the size of a pilot hole for any larger hole: Pilot hole size needs to be no larger in diameter than one-quarter the diameter of the finished size. Example: If your finished hole size needs to be 1 inch in diameter, then your pilot hole should be only one-quarter of an inch. When in doubt, make the pilot hole slightly larger than the thickness of the web of your finished hole size bit.

HZ DRILL BOOTS
Continued from Page 10

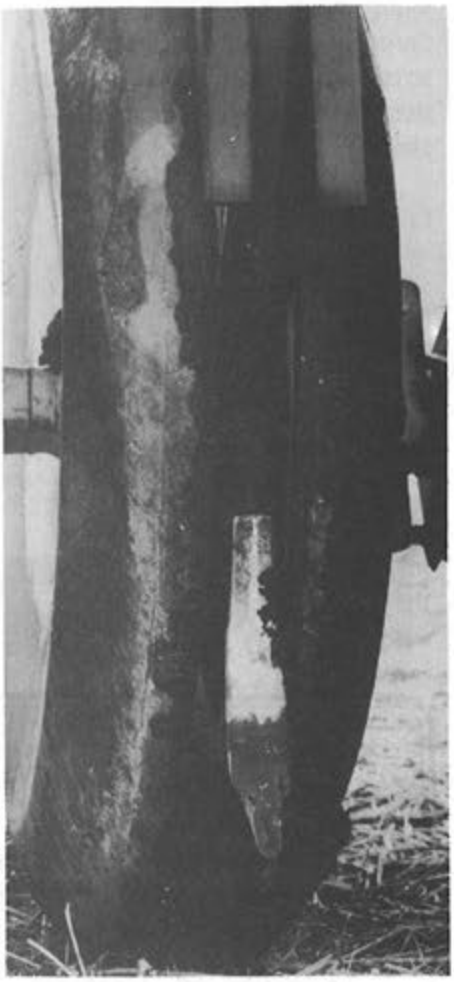
repair or purchases that will compliment longevity of the JD HZ Drill.

In assembling the pivot portion to the main body of the boot, we have added more weld to resist breaking. We achieved this strength by changing the design of the weld area allowing more weld on each side.

Improvements to the boot are not limited to the things not seen!

We've offered another Barnes Welding first in the package.

Worn boot where there was inadequate packer spacing. The packer wore on the side of the boot making the deep cut at the top. The boot roller was added after the damage was done. Notice replaceable bushing at the pivot point.



HZ Boot peeking out from between 2 close packers. Boot is now rubbing on the right packer, causing the wear you see in the photo below.

On the pivot arm there is 4 boot angle holes toward the front of the arm and one pivot hole. In the past this hole has become oblong because of tripping or constant vibration and we have had to re-drill and install a case hardened bushing in it's place. Now we are offering this as an additional option for the new boot.

When the bushing wears, then all you have to do is change the bushing and go back to seeding. (This is easily done in the field with a hammer and punch in a few minutes.)

There are THREE types of Boot Reinforcement Plates that we make:

One is very narrow and designed to reinforce the area of the holes for the point only, to resist bending from long fertilizer points.

The second one is a much larger plate that covers most of the lower portion of the boot to combat the same problem of bending.

The third plate is made to the exact shape of the bottom portion of the boot and is three-sixteenths thick iron. It is replaced by completely removing the original side plate and installed in its place. This plate has the three point holes punched in it and actually is the supporting structure for the point, where as the other two are only add on's and do not effect the hole pattern of the point.

We have noticed they all add strength to the point but the first two solutions appear to disrupt the flow of dirt around the point, effecting the finished furrow. Of course, even though the first two units are somewhat cheaper than the third repair, they all add the much needed strength.

Improving Combine Feeding
Continued from Page 6

use the old powders, I guarantee you that the end results will be much worse than you could ever realize.

In this particular instance, hardfacing not only extends the life of the auger, but it also improves feeding as well.

HZ DRILL TIPS:
Continued from Page 15

D. Keep two or more Barnes replacement boots on hand during seeding to avoid costly and untimely down time. [These boots look exactly like yours but are much stronger and cheaper.]

E. Replacement boot plates are available to replace your worn and well used sides of the boots. These are offered in one eighth and three sixteenths thickness with pre-punched hex and round holes. If you need to put fertilizer on with the H Z Drill, and you are experiencing boot bending, you can reinforce the lower portion of the boot with Barnes Reinforcement plates. We have two sizes to choose from and we need to know if it is the left or right hand side of the boot.

F. If you are having difficulty in removing the packers and bearings from the packer axle, please cut the tubing and straw picker housings from the axle to save from damaging the drill axle itself. The tubing is very cheap compared to buying new packers. When you need to replace a drill axle shaft, the material needs to be made out of 4140 material to withstand the heavy tensile load on the ends. [Tensile means the stretching or the pulling apart force that the axle nut would exert on the shaft.]

G. To aid the drill in going through more residue with or without notches, move the Boot "A" Frame back to the packers one half to three quarters of an inch. This allows the wheel to step on the straw sooner and then pull the straw through the drill.

H. When respacing your packers to two and three eighths inches, throw away all pieces on the axle except: The 4 bearings, sprocket, nut, and packers. Then when you re-space the packers you eliminate additional weak spots by installing one tube to replace the two original pieces. This little exercise will give you many more hours of trouble free service.

I. Hydraulic Lift Kit conversions are available to convert the manual lift to hydraulics. The conversions are simple to install and take less than one hour per drill. Hydraulic control helps you control plugging on the drill by allowing you to move the boots up and down while in motion [seeding], without leaving the tractor cab.

Improving combine feeding

In determining what areas to look at for improving combine feeding, we need to look at how the platform auger performs. If you have difficulty in getting the wheat to the finger section of the auger, then your problem could be in the flighting, or maybe even the pitch is not enough, or could be just improper hardface for that particular machine. If the wheat makes it to the finger section of the auger, but tends to slug or bunch up at the feeder house, then it is probably your feeder chain not doing it's job.

Have you ever noticed that your brand new combine or your new feeder chain works good? But, the next season it seems not to work as well? If this is the case then you are not alone, many farmers feel the same way as you.

What really happens is the new feeder chain has sharp edges and as it gets used, the edge becomes smooth and looses it's grabbing ability.

Here is one way to not have to buy a new chain, but with simple hardfacing on the front edge, [not the top] you can regain and even improve the original performance of the chain to help stop slugging and promote even feeding to the cylinder. Use Tungsten powder with 100 or larger grit. You will want to thoroughly clean off the leading edge of the feeder chain bar with a grinder before you hardface. The next step is to apply the 100 mesh powder with your powder torch being careful not to over heat the bar itself. Continue until you have hardfaced all the bars in the feeder house. There is more steps involved in this process but feel free to call for more anti-warping tips before you try it on your own.

Formaldehyde Poisoning
Continued from Page 9

During spring and summer most of the family's symptoms would disappear as the house would be opened up. Symptoms returned during District Fair Week, when cold weather started and the house was closed up with the heat on.

To fully eliminate the formaldehyde, the Barnes first removed every bit of the insulation and the dust that has accumulated in the walls. After the blocks of foam were taken out, the rooms were swept, subjected to fans and air hosing, vacuumed and further neutralized with sodium bisulfite. That last procedure required protection clothing for David.

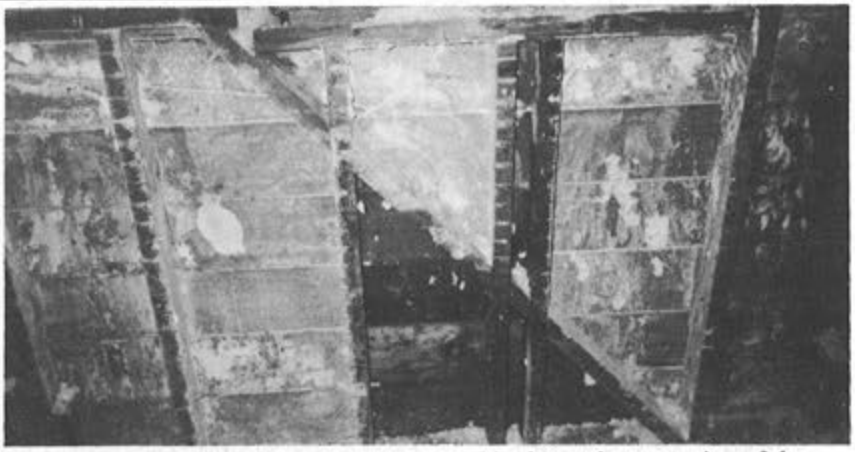
Formaldehyde may also be removed by washing drapes, bedspreads, and other washable materials. Kathy said that she will have to shampoo all the furniture, even if it was covered during the project. Furnace ducts are another place where the dust can gather.

David seemed to get rid of most of his arthritis symptoms - until he helped remove the foam from the house. The next day he was just as stiff and sore and achy as before, but it cleared up in about three days.

The family's sensitivity will probably always be with them. A recent visit to Spokane, where they stayed in a motel with new furnishings, brought on the same symptoms of nasal stuffiness. The symptoms disappeared after the Barnes returned home.

Choosing linoleum recently, Kathy held samples on her lap. After about 45 minutes, she said, her arms and shoulders took on the old familiar ache. But she is encouraged: those aches go away after she and her family are out of contact with the material that contains some form of formaldehyde.

It's even nice to have a normal cold for a change, she said.



The wall cavity after removal of the UFFI. This shows the saturation of the wood with the foam. Our next step, was to mechanically scrape down every square inch of the wall. The following step was to neutralize all wall surfaces.

Improvements on 9000 Points
Continued from Page 5

This process should be repeated every few seasons, depending on the acres seeded to give longer life for the point.

With this customer's encouragement, we decided to try to make life easier for him by incorporating an after-market chrome point on to his new John Deere factory steel point. This marriage was bound to work for many reasons.

This customer we are going to talk about actually experienced over 7900 acres on his point conversion before they needed any additional attention!

First, when we hardface, the normal two passes will only give you approximately one eighth inch of hard material. When we installed the chrome on the point, the chrome was almost five-eighths thick at the thickest part and started out at about one-eighth thick at the thinnest point.

Before we cut into the JD point we made a welding jig to make sure the new point was the same length as the original when we finished the repair method. The next jig we made was for cutting. We mounted the cutting jig and the new John Deere point in our cutoff saw and cut each new point to the exact same length and angle as the chrome point.

We then put the new modified point in our first jig with the chrome point and spotted the two pieces together with the welder. Next, we preheated the new assembly [chrome and iron point] to approximately 400 degrees and then welded the two pieces together. After the welding, we put the point up side down and put one bead of Tungsten on the bottom front edge to retain the sharpness of the point for many more acre-hours.

When all the additional hardfacing was done, the point was put in a ceramic blanket to keep it warm, while cooling could be slowed considerably. This step is very important!

These are the major steps in a retrofit of a John Deere, chrome point. However, the real advantage comes, when we take your worn out, hardfaced or unhardfaced point, that you have already used on your drill, and install this long wearing chrome point to your used drill point [shoe].

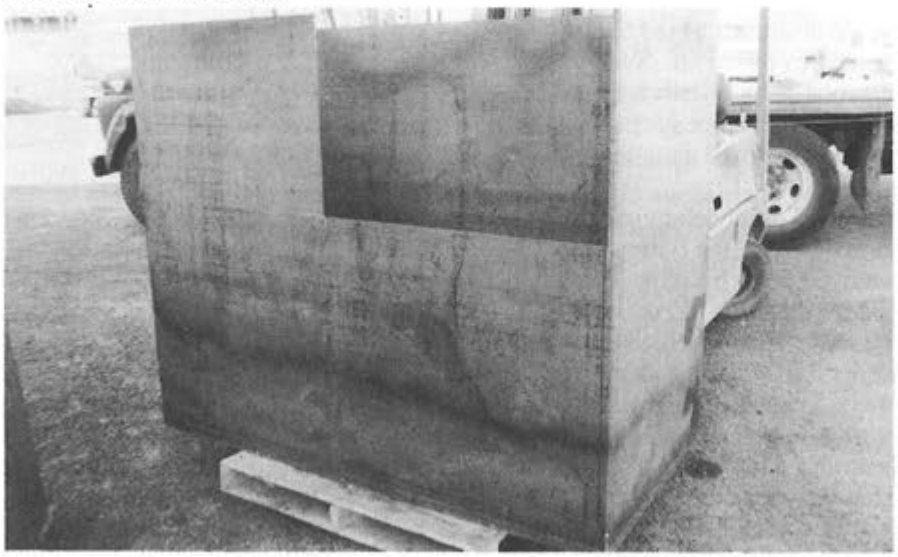
At this stage we can really offer longevity and real cost savings for your seeding operations.

Apple Float Tank System keeps Apples in Excellent Condition

A apple packing shed came to us to help them in rebuilding an apple float tank system. This was an improvement on an already existing trough system.

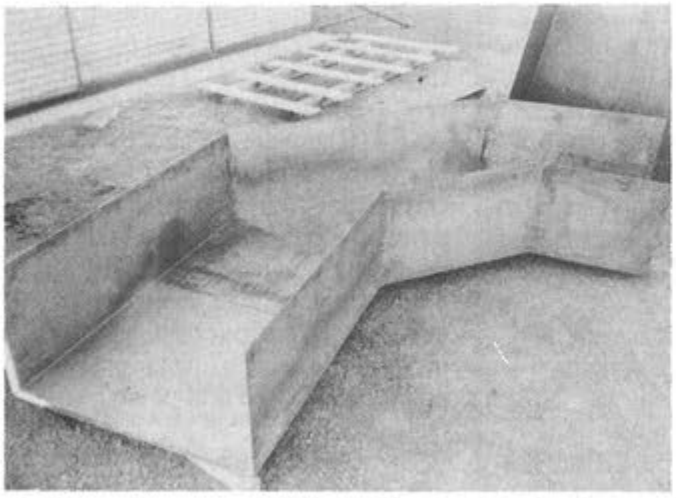
In the apple processing industry, the key to keeping excellent apples excellent is to handle them very carefully. Back in the old days removing apples from a apple bin was either removed by hand or most likely, the bin was tipped to allow the apples to pour out. As careful as humans can be they just can not do the job as well as floating the fruit in water. Water is a very forgiving medium.

Water aids in the cleaning [rinsing] of the apple, and to help keep the fruit at a constant temperature throughout its journey along the flume. The real purpose is to float out the apples from the apple bin. Since apples are buoyant all a person needs to do is empty the bin in a vat of water and out come the apples un-hurt. The apples are then floated down toward the pre sizer line where the fruit is sized and separated by color.

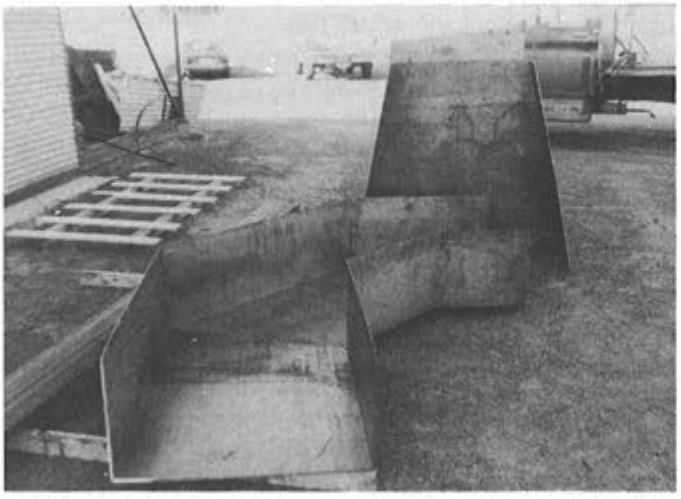


This is the tank where leaves and other debris is removed.

In building these units, they had to be done in sections, so they could be moved from Waterville to Brewster. They were channel shaped with each side 18" high and the bottom was 36" wide. Each piece needed to fit to each other tightly so we had to be very accurate in our bends [it has to hold water]. At the beginning of the flume was a collector which brought the apples together and controlled the speed of travel. At the end there was a 6' x 6' x 6' tank where leaves, and branches would be removed from the water while the apples went to the sizer. Our customer performed all the finish welding and installation of the preformed sections of iron on site at Brewster. They were pleased that all the sections fit together so well that it saved them considerable time in the complete job.



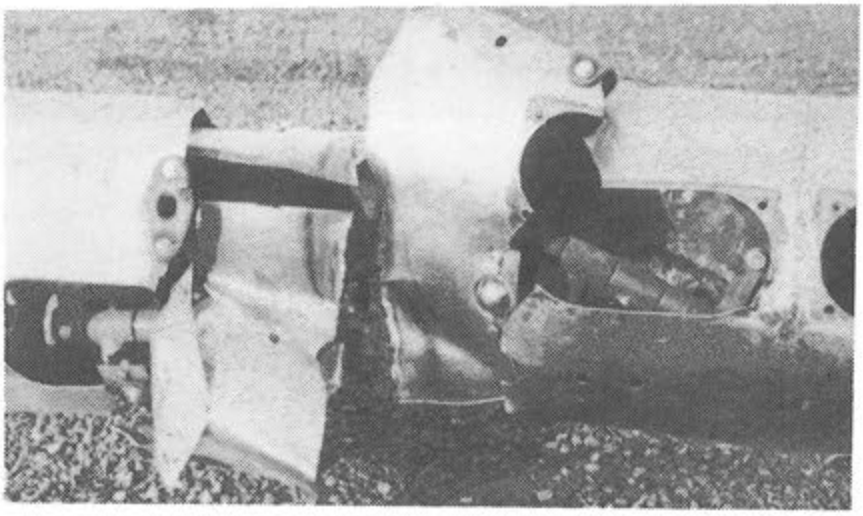
This section connects the tank and collector pieces together. Notice the tight fitting jonts.



The collector is the triangular shaped piece in the background.

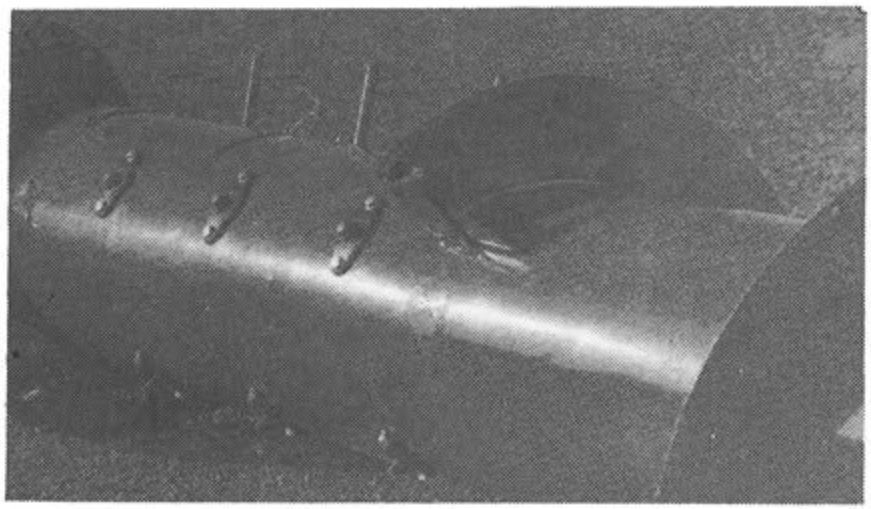
Don't Let A Damaged Finger Section Cost An Arm & A Leg

New Auger replacement costs $1500.00 - $2500.00 Does not include internal parts or hardfacing to the flighting.



Typical damaged Finger Section

Barnes rebuilt auger centers cost from $500. - $650. which is guaranteed to be perfectly straight.



Same auger with rebuild finger section using 60% heavier tubing for added strength.

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Welding & Machine

Waterville Industrial Air Park
(509) 745-8588

"We can straighten any auger to within 1/8th inch runout at our shop or *in your combine*."

BARNES Farm & Shop Magazine

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