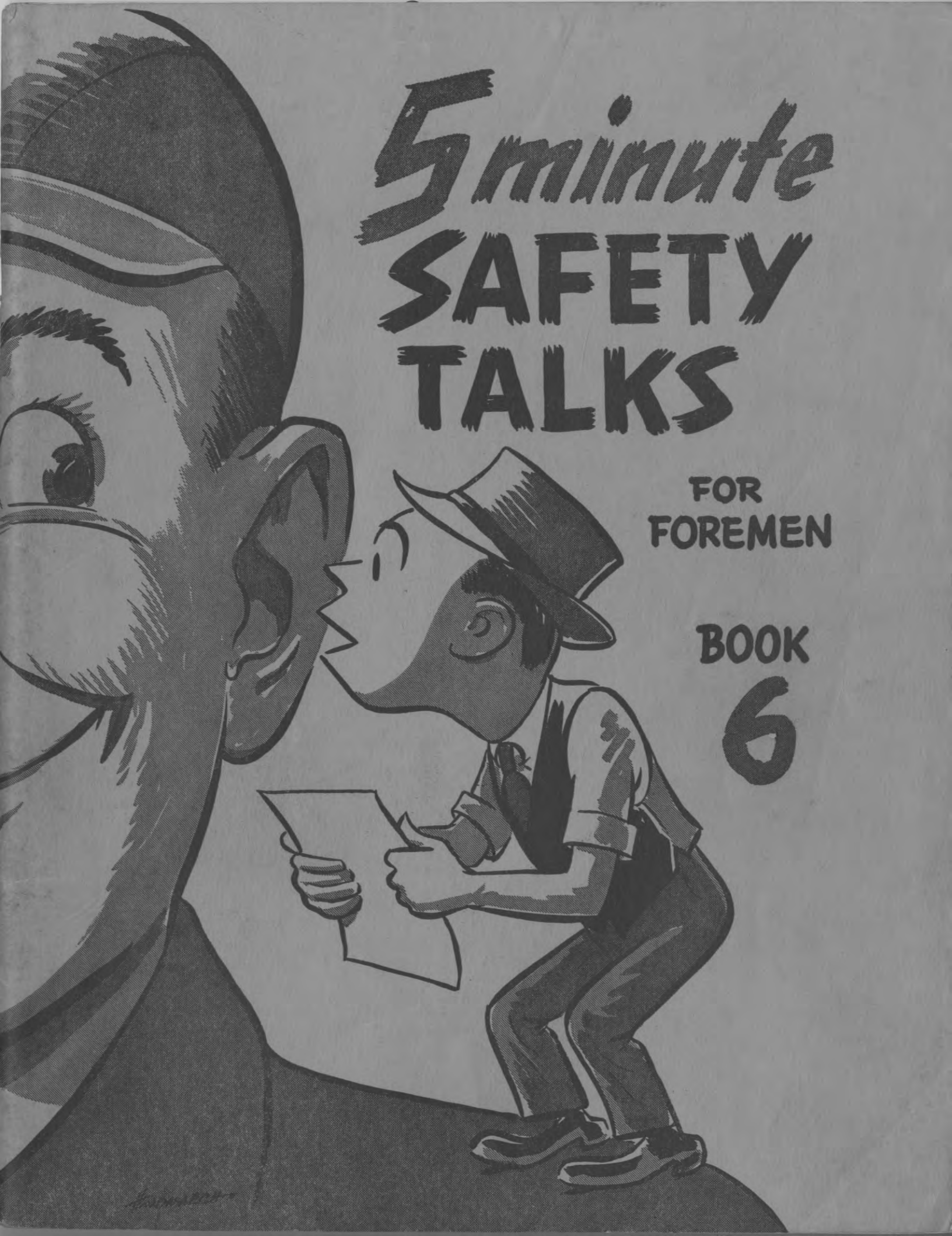
5 minute
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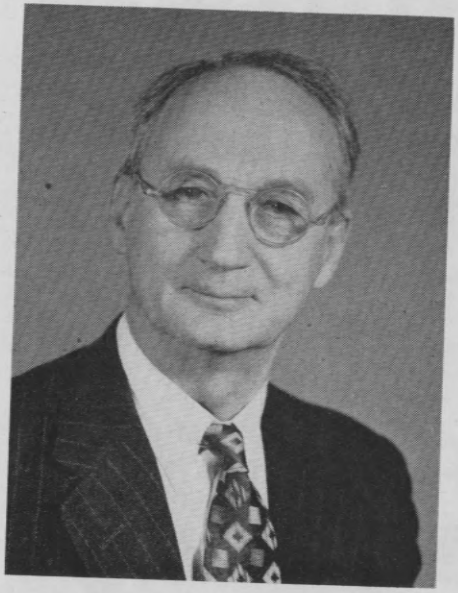
6

Book 6

Five Minute Safety Talks for Foremen



ROLAND P. BLAKE

These safety talks were prepared by Roland P. Blake, recently retired Principal Safety Engineer, Bureau of Labor Standards, U. S. Department of Labor. As editor and co-author of the book on accident prevention fundamentals *Industrial Safety* and author of *Safety Subjects* and other Bureau publications, and because of his work in the safety training field, Mr. Blake is recognized as one of the leaders in the safety engineering profession.

HOW TO USE THE TALKS

This is the sixth book in a series of safety talks prepared by the National Safety Council especially for the use of foremen. The talks in this book cover many phases of accident prevention.

PREPARING FOR THE MEETING

1. Schedule the meeting early enough in advance so that you will have a chance to become familiar with the subject to be discussed. You should be able to present the talk *in a convincing manner without reading it.*

2. Hold the meeting right in the shop. Because the meetings should be short, seating space is not absolutely necessary, but arrange things so all persons can see and hear you easily. A good time to hold the meeting is immediately after lunch when the work will not be interrupted and the shop is comparatively quiet.

3. Beforehand, gather all the posters, hand-out literature, and other material you intend to use at the meeting. Wherever possible use actual equipment to illustrate your points. For example, bring in mushroomed tool heads or broken hammer handles to show how they can cause accidents, or bring fire extinguishers, protective clothing, and goggles to show their proper use. For appropriate posters, handout materials, and safety instruction cards, see *Poster Directory, Service Guide 2.1,* and *Service Guide 5.2,* all published by the National Safety Council.

RUNNING THE MEETING

1. Have one safety talk meeting each week.

2. Limit each talk to five minutes (if discussion "gets hot," use discretion about cutting it off).

3. Start the meeting by complimenting the men for some recent good work.
4. *Give the talk in your own words.* Each talk can be torn out of the book so that you have it in front of you for easy reference. But use it only as a reminder of what you should cover in your own talk.
5. *Get your people to participate.* The purpose of these talks is to get workers to think about safety problems. One of the best ways to do this is to make the talk a discussion. Have your men name hazards and what to do about them. Encourage them to offer suggestions for improving the safety in your department.

OTHER ITEMS TO COVER

Review any injuries the gang has had during the past week. Discuss:

1. What the injury was
2. How it happened
3. How it could have been prevented

Review safety violations noted during the past week. Discuss:

1. Nature of violation
2. The danger involved
3. Constructive criticism (Note: Do not criticize anyone by name in front of the group)

Review the work planned for the week ahead. Discuss:

1. Hazards to watch for
2. Safety equipment to be used
3. Procedures to be followed

FIVE MINUTE SAFETY TALKS FOR FOREMEN

SCHEDULE OF MEETINGS

SUBJECT OF SAFETY TALK	DATE	FOREMAN
Your Tools	3/18/66	L. E. Thornton 1st officer
#4 Your workbench	6/9/66	L. L. Larsen 1st officer

SUBJECT OF SAFETY TALK	DATE	FOREMAN

NOTES

DO "AS GOOD AS YOU KNOW HOW"

Once upon a time there was a young salesman who took a job selling a book on farming. He decided to sell it direct to farmers. So he drove out into the country looking for a farm that was in need of better farming methods. He soon found one. The farmer was plowing and stopped to breathe his mules just as the salesman came along. So our hopeful young friend climbed through the fence, walked over to him, and went into his sales talk.

The farmer seemed interested, and when he said, "Say, Mister, that's sure a fine book," the salesman pulled out his order pad and said, "I'm glad you want the book. I know it will help you. If you'll just sign here, it will come to you by mail. You can pay when you get it."

But the farmer answered, "Buy that book? Why should I? I don't need no book. I ain't farming half as good as I know how to now!"

And that's the *why* of almost all accidents. A man almost never gets hurt doing as "good as he knows how." Of course, sometimes he hasn't been told the right way, or if he *has* been told, he hasn't understood so that he really doesn't know. But usually it's not that way.

A man gets hurt because he does something that he knows or should know is wrong, or because he fails to do something he knows he should do. For instance, he may fail to pick up a pipe nipple that rolls off his bench, and later he or someone else is thrown for a loss. He may fail to place a ladder so it won't slip or else have someone hold it. Maybe he doesn't put on his goggles for a little grinding job. Or perhaps he stands squarely in line with the saw on a ripping job so he's on the receiving end of a kickback.

I could go on and on with such examples. You fellows could add a lot more, but I'm sure you get the point which, put very simply, is: If we always do "as good as we know how" safetywise, we won't have accidents.

I've been trying to find out why we don't do "as good as we know." No one wants to

get hurt. No one wants to cause anyone else to get hurt. Why do we keep on making such mistakes? I believe I've found the answer. Think over what I say, and see if you don't agree.

I'll start with myself. Sometimes and in some things I try very hard to do the best I know, but not always. Why not? Well, a fellow can't be at his best all the time. People just aren't built that way. At least, I know I'm not. But when it comes to things that are important to me, things I really care about, I can be at my best or mighty close to it. So, of course, can every one of you.

The way that point applies to safety—to accident prevention—is simply this: We don't do as "good" for safety as we know because way deep down we don't consider it very important. We don't take the idea that we can easily get hurt on our everyday jobs seriously enough.

It's easy to keep from having accidents. Practically all accidents can be prevented if we'll just use good common sense—all the time—every time. It's mainly a matter of attitude—of how we look at things.

If each of us can just get it into his head for keeps that the way to avoid accidents is always to figure out the accident possibilities and apply good common sense to them, we won't have *any* accidents. These accident possibilities—or you can call them hazard points—are usually easy to see.

Suppose we take a second look at one of those accidents I mentioned—the ride on the pipe nipple. We'll figure out how to guard against the hazard, and we'll call on Old Man Common Sense to help us.

The pipe nipple rolled into the aisle. It threw a messenger backward so that his head hit the floor. He got a skull fracture. What would Old Man Common Sense have said? Pick the pipe nipple up at once? Yes, of course. But why let it fall?

The important point is that every time you put a pipe nipple down, you make sure it can't go anywhere and you set it where it will be ready at hand next time you want it. That might be in a drawer under the bench, or in a tray on the bench, or perhaps slipped over a rod fastened at the back of the bench. The same goes for a lot of other things—tools, bolts, nuts, screws, and such.

As this example shows, it all boils down to this: If we'll always call on Old Man Common Sense and do as he says, we won't have *any* accidents. We'll be doing "as good as we know how" *all* the time.

LIFTING

Safe lifting is something that we've all heard a lot about. We're told to lift with our legs, not with our backs—that our leg muscles are strong and our back muscles weak—to squat for a lift, not make like a derrick—and so on. These things are all true and we all know it, but lifting injuries, particularly back strains and pulled muscles, still give the doctors plenty to do. So do other kinds of injuries from lifting.

Men drop things on their feet, they get their fingers pinched or their hands torn, they get hernias and strains. It seems that hardly any man goes through life without getting hurt at least once from lifting, on the job or off it.

How come?

The answer is easy. We just don't make it a habit to always—and I mean *always*—use our heads when we lift. If you disagree, just look over a bunch of reports of lifting injuries. Better still, think over any that you've had or that you know about.

If you have *all* the facts of each accident, you'll almost always find that the fellow hurt didn't use his head. He was in too much of a hurry, or he tried to lift something too heavy for him, or he lifted bent way over, or he didn't have a good hold, or the load was too big or awkward for one man to handle.

A man doesn't need to get hurt lifting. *All* lifting injuries are preventable. And it's easy to prevent them. You need only follow a few rules—not just now and then—but *always, every time* you lift anything of some size or weight, like a bag of cement, a carton of beer, an easy chair, a length of pipe.

First, you should figure out about how much you can lift safely. It's a good deal less than the most you can lift. The fellow of average build can lift his own weight without much trouble, but unless he does it the right way, he's likely to strain his back or pull a muscle. Well-muscled young men in good condition may be able to lift up to twice their weight, but if they can do it without hurting themselves they should be classed as

professional weight lifters. Even those fellows hurt themselves sometimes.

How do you figure out how much you can lift safely? It isn't hard, but it does take a little common sense and some judgment. You can put it down as certain that lifting your own weight is dangerous. You can all do it, but if you don't do it right, you're likely to get yourself a very sore back. So set your safe limit lower: 100 pounds is plenty for most guys, in good physical condition.

The very husky fellows who do a lot of lifting might set their limit at about two-thirds their weight. But if you're on the heavy side, you'd better deduct 25 pounds or so. The fat man may be as strong as the lean man, or stronger, but he has the problem of getting the keg or carton he's lifting past that bulge without bending his back or getting off balance.

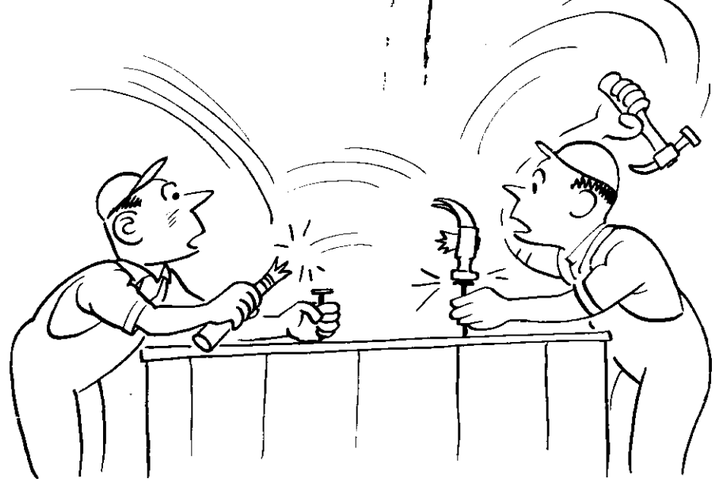
The idea of the safe limit is *not* that you should refuse to lift anything heavier. Instead its purpose is to get you to take *extra* care when you do lift more. Take a minute or two to decide the safest way to make the lift. In other words, plan the job.

Some fellows may think that planning each heavy lifting job is a waste of time, but if they do, they're badly mistaken. Most of the men who get hurt lifting would not be injured if they used their heads. What is that but planning?

Actually, of course, such planning is very simple. All it takes is a minute or two to size things up and check such points as these: Is it a one-man job? (It isn't if the load is too heavy or too big for one man to balance properly.) How high is the load to be lifted? How far is it to be carried and by what route? Where is it to be set down? How is the footing? Is there anything to stumble over? You fellows could add other points.

The thing I want to drive home is that you can make sure of safety in lifting if you will size the job up, think it through, and decide in advance just how you are going to do it.

Remember, take it easy. Place your feet so you are well balanced. Set yourself so that you lift straight up from your feet. Put your strength into the heft slowly, and if it doesn't feel right, take a second look. Perhaps the load is too heavy for you—maybe your stance is wrong—perhaps it's a two-man job. Use your head, and you won't get hurt. Lifting accidents *are* preventable.



YOUR TOOLS

I wonder if you fellows realize how many injuries come from the use of hand tools? I know I didn't until I got to digging into the records. No one knows the exact number, hut from the dope we do have it's certain that in the whole country there are more than 100,000 disabling injuries a year from hand tools. There'd be a lot more if the off-the-job tool injuries were included. It looks as though hand tool safety is pretty important, doesn't it?

You fellows all know that management is responsihle for the safety of plant and equipment. You know, too, that unless you do your work in a safe manner you may get hurt with even the safest things to work with. So you and management have a joint responsihility for keeping you from getting hurt on the job.

Your share of the responsibility is particularly great with hand tools because the way you use them is so completely up to you. I can tell you about hand tool safety, but I can't stand over you all the time to see that you work safely. You'd resent it if I did, and you'd be right.

So now I'm going to give you what I consider to be the most important points concerning hand tool safety. Each of you can take it from there and add anything I've missed.

The first thing is to keep tools in good condition. The old saying that you can tell a good mechanic by his tools is so true that in many plants it's "thumbs down" on a mechanic who applies for a job and shows up with a kit of bum tools. A good workman takes pride in his tools. He knows that to turn out good work his tools must be in good condition.

Oh yes, a really good workman can do a lot with makeshift tools, but it will take him longer and even then it won't be his best work —he won't be proud of it. And, of course, he's likely to have an accident or to cause one. If he takes a good swing at a heavy spike and the hammer head flies off, it may *not* hit his helper or someone else nearhy, but the rec-

ords show it will often enough to crack a head now and then.

If a hammer handle shows even a beginning split, it should be replaced. Even the most carefully taped handle is never as strong, and it's likely to be out of balance, too. Some fellows wrap their hammer handles to give them a better grip. If wrapping really helps, it's probably O.K., but it should be even, well secured, and replaced when it becomes worn.

Wrenches with worn or sprung jaws are great injury-producers. For example, a pipefitter was trying to break a coupling loose on an overhead line. The teeth of the wrench were worn, and it slipped when he bore down on it and threw him off balance so that he fell.

Luckily, this particular workman wasn't badly hurt, but that kind of accident happens all over the country. The details vary and so do the injuries—from a broken neck or a cracked skull to just having the wind knocked out of a fellow.

Of course, on such a job a person's likely to get hurt even with good tools if he doesn't handle himself right, but why make it harder by using defective tools? If a wrench takes hold when it should and lets go only when it should, the work can be done faster, easier, better, and safer.

Another important point is to use the right tool for the job. The pioneers had to make a few tools do for all kinds of jobs. Now, of course, tools are easily available in endless variety. The fact that each of the tools we use is designed for a specific purpose helps safety, helps production, helps quality of workmanship, and saves effort because the work goes more smoothly.

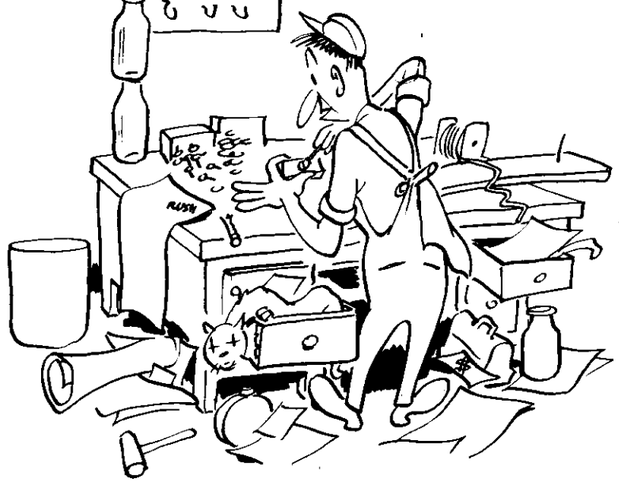
This specialization of tools makes it particularly important to use the right tool for the job always. Wrenches make poor hammers. Screw drivers aren't made to be used as chisels or pries. A mecbanic's hammer can be made to drive nails, but shouldn't be. A claw hammer will lose face if it's used to do the work of a mechanic's hammer. And so on.

All this may sound elementary to you fellows because every one of you knows these points—and a lot more besides—about misuse of tools. But can a single one of you honestly say that he never, no, *never*, misuses a tool? Any who can are exceptional. Accident records prove that misuse of hand tools often causes accidents.

It's time to wrap this talk up. As we've seen, hand tools cause a lot of injuries, but they could all be prevented if everybody who uses tools would *always*:

1. Keep his tools in good condition.
2. Use the correct tool for the job.
3. Use it in a safe manner.

Remember, good workmen and good tools go together, and safety rides with good tools properly used.



YOUR WORKBENCH

If you haven't thought much about it, you probably would say that working at a bench is just about the safest job there is. If you think that way, you're wrong. The accident records prove it.

Of course, there aren't many serious injuries, although there have been some smashed feet, strains from lifting, and even a few cases of fatal or near-fatal electric shock. But there are plenty of cut and bruised and gouged fingers and hands, often the result of tools in poor condition.

Offhand, you wouldn't think there's much eye hazard in workbench jobs. Wrong again. Lots of fellows get small particles in their eyes. Once in a while there's a serious eye injury.

What's behind all this? My guess is that too many think they don't need their safety-mindedness at the workbench. If you'll take a walk around the plant and look the workbenches over, you'll see what I mean. You'll find some neat ones, but you'll also find some with things lying loose all over them, a mess of stuff in the drawers, and an assortment of bum tools.

If you pick out the worst one and look up that guy's first-aid record, you'll probably find a long list of little injuries and perhaps some lost-timers. Or if he's careless about reporting to first aid, he may have had some infections. Probably, if you could check up further on the fellow, you'd find that he doesn't do very good work and not very much of it.

I can give you a dandy example of that sort of thing from another plant. A visiting safety engineer was going over the first-aid records. He asked about one fellow who had piled up a long list of first-aid treatments—skinned knuckles, cut fingers, particles in eyes, mostly. He was a bench worker on subassembly piecework.

The visiting engineer wanted to dig further into this case, so he was taken to see the foreman. The two of them stood where they could get a good look at this worker and his bench. The fellow was working hard apparently, but while they were looking on he made several

false motions and dropped a couple of things. He laid a tool down, soon wanted to use it again, and had to hunt around for it. The bench was in disorder. An S-wrench and a couple of nuts were lying on the floor. His clothing looked sloppy. His overalls were torn and very dirty.

At the next bench, which was very well organized, was a neat workman. All his motions were sure and he worked fast. He had a place rigged up along the edges of the bench for some tools, with small tools placed neatly in the drawers. When this worker wanted a tool, he knew exactly where to find it. When he was through with it, he slipped it right back into its place, leaving the bench area free for the work at hand.

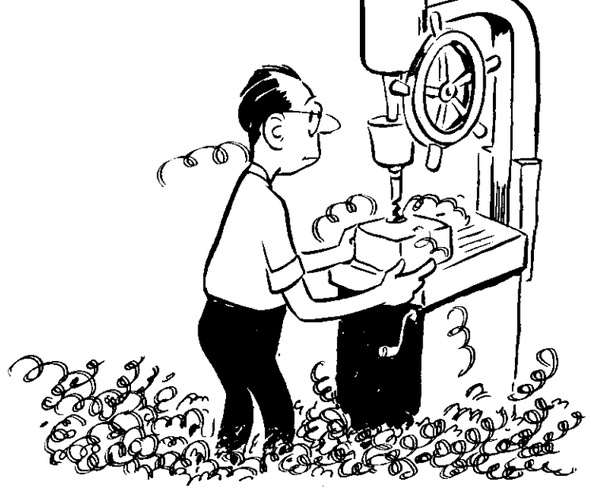
After watching these two employees, the visiting engineer looked over their production records. The orderly worker was making nearly twice as much as the slipshod man because of his higher volume of work. His work was good, with seldom a reject (the sloppy neighbor had rejects aplenty). A check of the neat man's record at first aid showed a clean slate for more than a year, and only three cases—all first aid only—in the nearly two years he had been with the company.

To check further on the differences of housekeeping and methods of the two workers, the visitor went to the tool room, where all tools were issued on checks according to requests from employees. The slipshod worker seldom bothered the tool room, but the orderly fellow double-checked each tool he took out, and he was always taking tools back when they became even slightly out of adjustment or damaged. He was so exacting that the tool room almost called him a "nuisance."

The foreman looked at it differently. The exacting worker had an excellent safety record and a high production rate. When there were changes in assembly, he took them in stride. On the other hand, the foreman was often "called down" because of the poor work turned out by the disheveled worker.

This case I've been telling you about is a good example of the importance of keeping your workbench clean, well organized, and safe. You can see how it spelled a big difference in these two workers. Each had the same kind of bench and got tools from the same place. But one practiced good housekeeping. That's the fellow who had a high production rate, and no accidents. His sloppy fellow worker had lots of accidents and a very low production rate.

I'm sure you fellows get the point—the bench can be a safe place to work. But you have to make it that way.



YOUR "SURROUND"

I'm going to throw a new word at you fellows today—the word *surround*. Rather, it's a new meaning for an old word. When buffalo hunting was an important business a hundred years or so ago, a large team of hunters would surround a herd of buffalo and kill the ones they wanted. That was called a *surround*.

Now production engineers use the word to mean the area around your job—the place where you do your work. It's easy to see that if your surroundings are full of hazards, you're likely to get hurt. Your job isn't a safe one if the surround isn't as safe as possible. A few examples will show what I mean.

Jack was a punch press operator. He was feeding strip steel into the press through a guide. The guide guarded the ram except that on the upstroke the ram cleared the top of the guide by a couple of inches or so. A small pulley fell off a passing hand truck, rolled across the floor, and struck the back of Jack's leg. He threw his hand out just as the ram reached the top of its stroke. His hand went over the guide, and three fingers were mangled between the ram and the guide.

Of course, the ram should have been enclosed to the top of its stroke, but the surround was unsafe, too. There was a broken place in the concrete floor. One wheel of the truck hit it and jounced the pulley off.

Ed was ripping some planks on a table saw. He had them on a four-wheeled hand truck back of the saw table. Just as he was starting a plank through the saw, his foot slipped. Trying to regain his balance, he pulled the plank sideways. The saw caught it and threw it back just enough to cause him to fall full length. His head hit the floor hard enough to stun him. He was lucky that it was no worse. The floor was very slippery. It should have had an antislip surface. Probably an antislip paint would have done the trick.

Mary was on an assembly job. Some of the parts were 2-inch pieces of ½-inch plastic tube. Sometimes she would drop a piece. If it rolled off her bench, she didn't always bother

to pick it up. Her foreman had spoken to her about this several times, but she was a good worker and he didn't want to get tough.

At noon one day, as she hurried away from her bench, she stepped on one of the pieces of tube. It took her for a nice little ride headfirst into a pile of castings. She got her face mussed up something awful just because she had failed to keep her surround safe.

Such accidents as these, with all sorts of variations in detail, occur all over the country. Every one of them could have been prevented if a little more attention had been paid to safety. In some cases, the accident victim didn't have enough safety-mindedness. In most cases, it just wasn't used on the surround.

Part of the responsibility for the safety of the work place — the surround — is management's. This, of course, includes such things as good lighting, clean air, heating, safe floors, adequate work space, safe arrangement of machinery and equipment and operating methods.

But each of you has, and must have, a lot of liberty of action as to how you handle yourself. It's up to you to handle yourself safely. As your foreman, I have the duty of instructing and helping and advising, but safe doing is a personal responsibility. So what should you do about it?

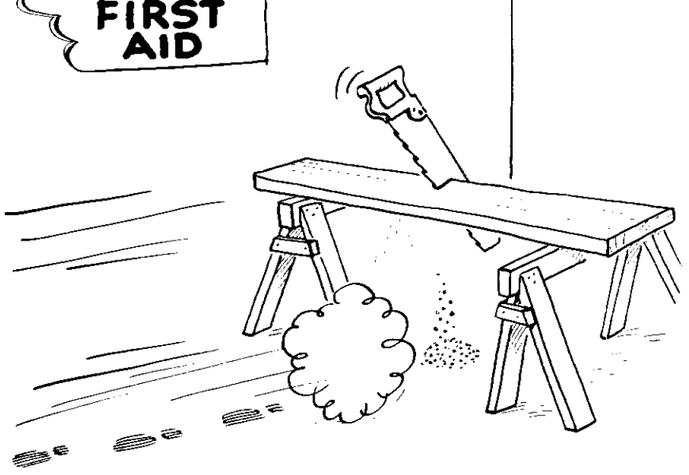
First of all, you should take a good "look see" at the start of each shift. Make sure you have the space you need to do your work. If someone has parked a hand truck or maybe a load of stock in your way, get it moved. If there's anything loose on the floor, pick it up and put it where it belongs. Maybe it was something you dropped the day before, didn't pick up at once, and then forgot about.

Are there any slippery places on the floor? Is the lighting right for the job? If not, tell me about it. Is there anything about the job that might injure anyone else? If so, maybe you can handle it yourself, but if you need help, let me know.

The same approach applies if the job is more or less a roving one, like maintenance or yard work. You should still take a careful "look see." In fact, it's usually far more important to look things over on such a job than on one that stays put in the same place day after day. For example, a welding job brings in a fire hazard. Do you remember the *Normandie* fire? We lost that great ship just when we needed it badly because a welder paid no attention to his surround. Neither did his foreman.

Perhaps the job calls for an electric drill in a pipe tunnel. That brings in the hazards of electricity. And so it goes. If you will look over your surround carefully before starting each day's work or each job, you can keep yourself a lot safer. Finally, once your surround is safe, keep it that way. Keep it shipshape.

Foreman: You might wind this discussion up by having the men name specific jobs and the things that should be checked in the surround of each.



AVOID INFECTIONS—GET FIRST AID

You fellows all know that you're supposed to get first aid for every little injury, no matter how small—every little finger nick, or bruise, or burn, everything that gets through the skin into flesh. The boss expects me to see that you do. And it may save you suffering, too. Maybe some of you don't really know why it's so important to get first aid. I'll try to give the story to you as the doctor gave it to me.

The danger, of course, is infection. Do all of you know what an infection really is? It's the result when germs get through your skin into the warm nourishing flesh underneath and go about the business of multiplying. They have big families and they work fast. A few get in today. Tomorrow there may be a million. You figure what another day would do if none were killed. I can't think in such big numbers.

I said, if none were killed. Fortunately, in most cases they're killed almost as soon as they get into the flesh. In our blood there are millions and millions of white blood corpuscles that attack and kill invading germs. The doctors know just about how many there should be in a standard size sample of blood to provide the defense we need against germs. If they find too few, they try to build the number up. If they don't succeed, our future doesn't look too good.

Remember that there are germs all about us all the time. A sufficiently powerful microscope would show them on your skin and mine, in the dirt on the floor, particularly if there's a little moisture, on tools, and just about everywhere. But that isn't too important because we've developed among germs and have built up defenses against them.

The two important defenses are the white blood cells and the skin itself. Our skin protects us in many ways. If it's broken through, the germs get in and we have to depend on the white cells, although not entirely *if* we get first aid promptly. Whatever it is that makes the wound usually leaves some germs in it, more than one kind probably.

If the wound bleeds freely, all the germs may be washed out. If it doesn't bleed, the

nurse will wash the wound or treat it with an antiseptic to kill as many of them as possible. The bandage she puts on it is to keep more germs from getting in until enough skin has formed over it to keep them out.

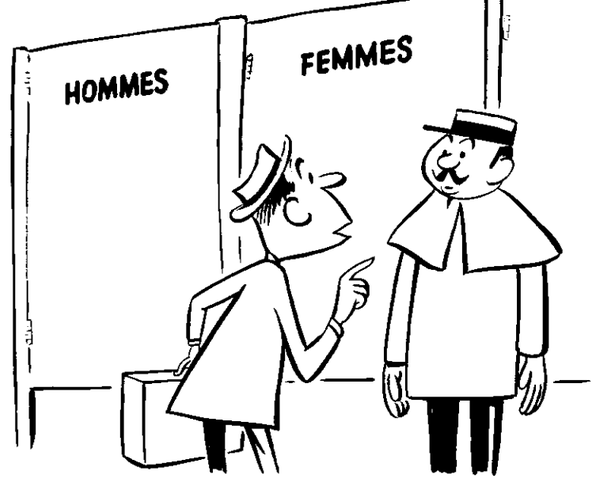
The white blood corpuscles seem to know when germs enter the body. Nobody knows just how. But they gather around the enemy force and get busy. If first aid has taken care of most of the invaders, it's easy and the battle is soon over. The wound heals and is forgotten. But if you don't get first aid, it's tougher. Reinforcements are rushed up by the blood stream. The tiny blood vessels (capillaries) in the flesh around the wound stretch to hold more blood and more white cells, and there's swelling and redness and heat. If many white cells get killed, pus forms.

When the redness spreads, if, for instance, it runs up your arm from a cut on your hand, it means that the germs have broken through your defenses and you're in trouble. If they get into your blood stream in force, it's really bad. The germs can use it to reach all parts of the body, just as the white cells can.

If that sort of thing happens, you need a doctor quick. Before we had the wonder drugs —the antibiotics like penicillin and the others (more are being developed right along)— such a situation was desperate. The doc was likely to have to cut off your arm to save your life. He had a tough decision to make. Your arm against your life. What were the odds? Which way to bet? But now the situation is much better. The right wonder drug or drugs win the battle quicklv in almost all cases if they get there in time.

One kind of wound—a deep puncture made, for instance, by a dirty, rusty nail or a dirty sliver—is particularly dangerous. The object leaves whatever germs happened to be roosting on it deep in the flesh where the blood can't wash them out well and the nurse can't either. Where there's dirt, there are germs. Some of them are likely to be a particularly vicious kind — the germs that cause lockjaw (tetanus). They're tough fighters and hard to kill. But there's a vaccine that will handle them if you get it in time.

Now do you see why the company wants you to report every little injury for first-aid treatment? Believe me, an infection *can* mean your life.



DON'T TAKE A CHANCE

Everybody who's had much experience investigating accidents knows that chance-taking plays a big part in their occurrence. I think we all know it, too, but probably every one of us will take a chance once in a while. Usually we get away with it. If we don't have an accident—if we don't get hurt—it's because things weren't quite right for it. We were just lucky, that's all.

Why are we like that? I've tried to figure it out. It looks to me as though it's mostly because we've grown up with the idea that it's O.K. to take chances. That attitude seems to be a part of human nature, but we can change it if we want to. Lots of things that aren't good are a part of human nature—like being envious of some other fellow or always wanting our own way. Right guys control feelings like those. They don't yield to desires they know are wrong. But even such right guys will take a chance with their own safety once in a while. Why do they? They usually know they're running a risk.

It seems to me that one reason why men take chances is that way down deep in the subconscious they think they're sissies if they don't. They've grown up with that feeling. Any active, husky boy will risk his neck any time to keep the fellows from calling him a sissy. That attitude is back of a lot of teen-age trouble. A youngster often knows better, but he doesn't want to be "shown up" by the gang.

If I'm right, the thing for each of us to do is to take a good hard look at ourselves, dig way down deep into our own minds. No one can do it for us. We've got to do it for ourselves. We've got to dig that silly attitude out where we can get a good look at it. We'll realize, if we do, that it's teen-age foolishness. Do we want to act with the immaturity of a teen-ager? I don't believe so for a minute.

Some writer once said, "The boy is father to the man." He sure was right, in a way. We all keep some of the attitudes we had as kids, and we'd be better off without some of them. The feeling that there's something brave about chance-taking is certainly one of those we'd best be rid of.

There are other reasons why we take chances, too. Waiting is disagreeable to most people; so they'll crowd a light to save two minutes even though they know, if they stop to think about it, that in the next hour they'll almost certainly waste several times two minutes.

Another reason is that we don't like to go to extra trouble or extra bother or take any extra steps. A guy on a ladder, for instance, will overreach rather than climb down and move the ladder. Or he'll drive a nail with a monkey wrench rather than walk ten steps to get a hammer.

One more reason causes a lot of trouble, a lot of injuries. A good many guys, when they don't know for sure the safe way to do a job, don't want to ask their foreman. Probably some of them think they know more than he does about it. Maybe they do sometimes, but at least they ought to realize that two heads are better than one. Anyway, part of every foreman's job is to take some responsibility for the safety of everyone in his crew. So you may be sure that darn near every foreman will help if he can. I'd try to.

Some fellows don't ask their foreman because they're afraid he'll think they're dumb. But that's being dumb for sure, because sooner or later their mistakes will show them up.

No, fellows, it doesn't pay to take chances. Take the safe way always. If you aren't sure, ask me. It's part of my job to give you every bit of help I can. If I don't know the answer, it's up to me to get it. The responsibility becomes mine when you ask me.

Don't be a teen-ager. Don't take a chance.

A NEAT PLANT

We Americans are proud of the way this country has advanced in the last fifty years. We're proud of the great progress we've made in all sorts of ways—bigger, finer plants, better machines, better, more comfortable homes, fine cars, radios, television, and all the rest. I'll bet, though, that if I asked you to name other ways in which we've advanced not one of you would suggest neatness and cleanness in our plants. But you should, for fifty years ago, with few exceptions, manufacturing plants were dirty, smoky, smelly, uncomfortable places to work.

Then things began to change. Management began to realize that dirt and disorder are costly in many ways. Dirt and dust and smoke damage products and cause machinery to wear out faster. People dislike working in dirty plants. So more and more, neatness and comfort and attractiveness were built into new plants. Old plants began to clean up. They had to or go out of business.

Today plants that aren't at least reasonably well lighted, clean, and comfortable to work in are the exception. Most plants have good wash and locker rooms, drinking fountains, and first-aid rooms. They usually have lunch rooms and many other facilities for the comfort and convenience of the men and women who work in them.

I believe we should all be proud of our plant, and I think most of us are. The management wants the plant kept neat and clean and orderly, as attractive and comfortable a place to work in as possible. A lot of money is spent and a lot of things are done to keep it that way.

Foreman: Here is a good place to have the men name as many of the things done to keep the plant neat and clean and comfortable as they can think of. Don't overlook dust and smoke control and ventilation.

The management can't do the entire job, though. Unless we all help, it's up against a tough proposition. Sure, the pickup and clean-up crews can run around all over doing their best, but if we don't do our part they're be-

hind the eight ball all the time. I don't mean that each of us should get a pail and brush and scrub the floor. Nor is washing windows part of our job. But each one of us should keep his own job in order. I'll run off a few examples.

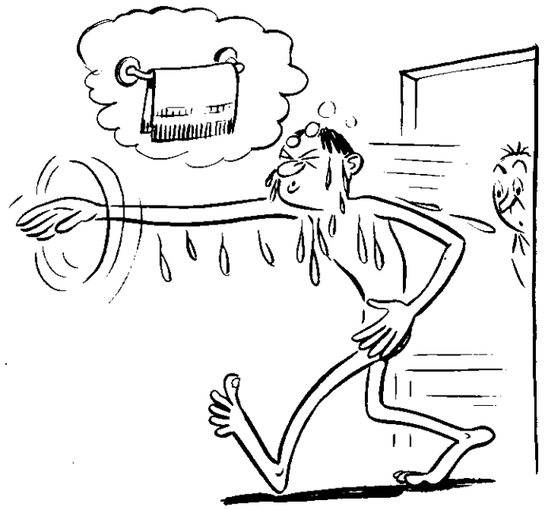
Take a machine job. The machine and the working space around it should be neat and orderly at the start of the shift. If it isn't, put things in order before you start to work. Be sure there's no loose stuff around underfoot or on or under the machine. Have a convenient place for each tool or part you use. Have a place for the materials or parts you work on and a place for the stuff you turn out. At the end of the shift, put everything in order and clean up the machine. Leave it ready for the next shift, yours or some other fellow's, as the case may be.

Take a bench job. Again, have everything in order before you start to work. Have a place for each tool, and return it to that place after each use. If you drop something, pick it up at once. At the end of the shift leave everything clean and shipshape.

Take a roving job, all over the plant maybe or all over the department. Always clean up after yourself on each job—in each place where you work. Leave everything in order. If you don't, you will leave disorder wherever you go. Your loose stuff left around may cause someone an injury, too. One of the worst kinds of disorderly conduct is to leave a guard off somewhere. Disorderly, unsafety-minded guys have set up a lot of injuries for others that way.

Finally, don't litter up the plant. If you eat a candy bar, put the wrapper in a trash can. Don't ball it up and drop it behind something. Where smoking is O.K., put your match sticks, cigarette butts, and ashes in the receptacles provided. Don't leave pop bottles around. And, for Pete's sake, don't leave wads of gum around. That's kid stuff for sure.

Be neat and orderly, and help keep this a plant to be proud of.



YOUR WASHROOMS

I wonder if you fellows know how important clean and sanitary washrooms are to your health. Or what good disease-spreaders dirty ones can be. I know I didn't until I started digging into the subject. I read up on it, and I asked the health people a lot of questions. I got a lot of dope, and it all points the same way. Clean, sanitary washrooms are mighty important to all of us.

The record speaks for itself. The list of diseases that have been spread by dirty washrooms is a very long one. Clean, sanitary washrooms can help prevent the spread of disease. That is, if the people who use them cooperate by using them properly.

Germs thrive on dirt. You'll find them just about everywhere, but they're usually thickest and healthiest in damp, dark dirty places that are warm and moist. As we go around, we pick some germs up on our clothes and shoes and on our hands, when we handle dirty germ-laden things.

We all go to the washroom several times a day. At lunch break and at the end of a shift the washroom is apt to be crowded. If it's dirty and if the guys are careless, there's a beautiful setup for the germs to spread to everyone and to grow and multiply.

Not all germs are harmful. Many kinds are harmless. Some are even beneficial—like the ones that turn sweet cider into vinegar and grapejuice into wine. The human race has evolved among germs, and our bodies have developed defenses against them. That's what makes it possible for us to keep on living at all.

It's the same with all animals. They all have built-in resistance to germs that stays with them through life. When they die, their resistance dies with them. That's why meat decays so quickly if left where it is warm. The germs get to work fast. In the cold air of your refrigerator they can still work, but very slowly. But if you freeze meat, it will keep as long as it is frozen. Freezing doesn't kill most germs, though. Thaw them, and most of them are as good as new.

I want to emphasize the fact that resistance

to germs is different for different animals. It's different, too, for different people. That's why when a number of people are exposed to certain disease germs, some will probably get the disease and some won't. Finally, and perhaps most important to each of us, is the fact that our resistance changes from time to time. When you're in good health—not over-tired, getting plenty of sleep, eating well, living right—you can throw off germ attacks that would get you down if you were run down.

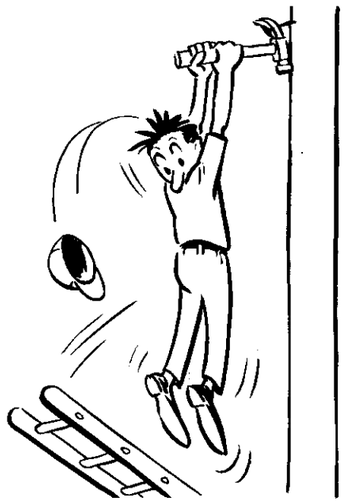
Some people seem to catch about every disease that comes along. That means that for some reason their resistance is low. That kind of person would be wise to keep on driving the old jalopy and spend his "new car" money on the best doctor in town to see if he can find the trouble and correct it.

Now let's get back to the washrooms. The company has spent a lot of money installing floors and walls that won't absorb moisture and are smooth and easy to keep clean. Good fittings and equipment have been put in. The rooms are well lighted and well ventilated, and management tries to keep them clean and neat, just the way you like to have your own bathroom at home. Also—and this is very important—an effective germ-killer is used regularly. The aim is to keep everything so clean that the germs won't have any dirt to feed on, and to try to kill any germs that may be brought in by those who use the washrooms.

Everyone who uses the washrooms should cooperate fully for the sake of his own health, if for no other reason. It's really very easy. Wash thoroughly when you wash. Always put the used towels in the container provided for them. A towel, damp from use on a pair of hands that haven't been thoroughly washed, is a beautiful place for germs.

When you take a shower, wash your feet thoroughly, particularly between the toes. The germs that cause athlete's foot like to settle down between a couple of toes where it's warm and moist. The best way to prevent foot infections is to use plenty of soap and water and to dry the feet carefully.

Help keep everything neat and clean in the washrooms. That goes for your clothes locker, too. But you get the idea. Clean, sanitary washrooms are important for your health. The company is trying to keep them that way, but it needs everyone's cooperation. Are you giving yours? Think it over.



DRIVING AND PULLING NAILS

Have any of you fellows ever thought about safety in driving or pulling nails? Perhaps you think there isn't much to it. I might think so, too, if I didn't know that just about everyone who drives a few nails now and then gets a bruised finger or banged-up fingernail sooner or later.

Other unpleasant things can happen, too, when you're driving and pulling nails. For instance, a badly hit nail may fly and strike someone—even put out an eye. Loose hammer heads are likely to fly off, and they can land a nasty wallop when you're taking a full arm swing at a spike. A cracked handle can spoil the swing and cause a glancing blow or even a miss.

Sometimes such a handle can push a sliver deep into the palm of your hand. It not only hurts like the very devil, but such a wound is particularly likely to become infected.

Very bad germs are likely to be roosting on such slivers, and once deep in warm flesh they hop happily off their sliver and get busy raising huge families. The hurting will change to a dull ache, the hand will swell and throb, and, before long, red streaks will start up your arm. Then, you'd better see a doctor fast.

With the help of the wonder drugs he'll probably have you O.K. again in a few days. In the old days you would have been a very sick fellow. You might have lost your arm or even your life. That's why you should get first aid at once for a sliver. That sort of injury is usually far more dangerous than most open wounds.

Carpenters learn the knack of driving nails cleanly and quickly without banging their fingers. They have to, or they couldn't be carpenters. Few other men ever do, probably because they figure that "any fool can drive a nail." Anyone can, but unless he takes a little care and uses his head, he won't do a good job or do it safely. It seems so easy, but in reality it isn't.

The hammer must be right. The head must be set at the proper angle and on good and tight. The handle must be smooth, straight

grained, and shaped to give a good grip, and of the right length and weight to give good balance. The size of the hammer should be right for the size of the nail. Try driving a 3/8-inch brad with a full-grown claw hammer, and you'll see what I mean. You'll probably bang a finger. The condition of the hammer face is important. It should not be chipped or worn away from the shape the manufacturer gave it, just a trifle off flat from edge to center.

When you drive a nail, the center of the hammer face should always meet the nail head. The direction of the blow should be exactly in line with the nail. If it isn't, the nail may fly at the first blow or bend at the second.

It requires practice to hit a nail right every time or practically so. You have to learn to "groove" your swing, that is, make the hammer head go through the same path every time and hit the nail head always dead center and at the right angle. To find the right angle, you simply set a nail, hold the center of the hammer face on the nail head, and move the handle up or down until the face is perpendicular to the length of the nail. That's the position the hammer should be in when the blow lands.

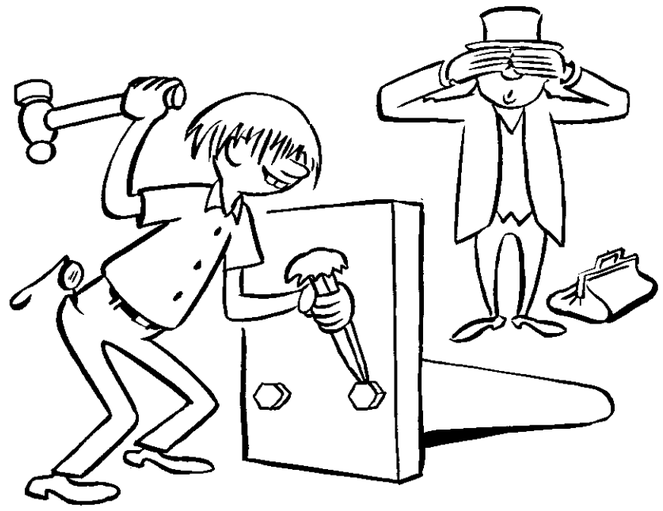
With practice, anyone can develop the knack of grooving a hammer, but few go to the trouble. Actually, it's worth while many times over because if you don't have this knack you waste a lot of time pulling out bent nails, you waste nails, you don't do good work, and you'll probably bang a finger now and then.

People even get hurt pulling nails. For example, one "do it yourself" guy went after a 20-penny spike with an ordinary claw hammer. When it didn't come, he threw his weight into it. The handle broke, and his knuckles landed with an awful wallop on the edge of the beam. Two of them were broken. That job called for a pry bar, as he knows now.

Men have fallen off ladders when they took a good yank at a nail that let go easily. And there have been more cases just as silly. You fellows can figure out plenty of ways to get hurt pulling nails if you'll just use your imagination. You'll also see just how such accidents can be avoided.

It really all boils down to this: keep your tools in good condition, choose the right tool for the job, and use a little judgment.

Finally, never leave nails sticking out unless you're going to hang something on them, and then be sure they're so located that they present no hazard. Deep nail wounds, like any other puncture wounds, are very dangerous. So pull out projecting nails or bend them over flush with the wood so the points can't get anyone.



COLD CHISEL OPERATIONS—REMOVING A RUSTED BOLT

Probably every one of you either knows or could figure out for himself how to do a chisel job safely, but I'll bet few of you have. So I hope you'll remember the points I make today and make use of all of them that apply on the next chisel job you have.

Keep these safe practices in mind when you use a chisel at home, also. For some reason, a lot of fellows who follow safe practices on the job seem to forget all about safety when they ring out. Are any of you guys like that?

First, I'll run quickly over the hazards of chisel work—the ways men get hurt using these tools. Chips from mushroomed heads give the doctors a lot of business and now and then give some to manufacturers of glass eyes. Chips from over-tempered chisels or from the material being chiseled sometimes do the same.

Fingers get smashed and knuckles skinned or even broken when the chisel isn't held correctly or the hammer isn't kept in the groove. If a chisel is too short, the hazard is increased. It should be long enough to allow a full four-finger grip with clearance of at least 2 inches from the head of the chisel and similar clearance from the work.

Be fussy about the chisel. Don't use it if the head is mushroomed or the cutting edge is nicked (that means it's too hard). And make sure the hammer handle is not split and the head is on firmly. Check the condition of the hammer face, and try the hammer for balance.

The number of injured and lost eyes has proved many times over that eye protection should *always* be worn on chisel jobs. Probably most safety men prefer safety goggles to face shields, but many men who object to goggles are willing to wear face shields. There's one thing for sure—a face shield that is faithfully worn is a lot safer than goggles that are now on, now off.

There's some difference of opinion as to the safest way to hold a chisel. Some say to hold it in the hollow of your hand with the palm up, with the first and second fingers back of it and thumb and third finger in front of it. Others prefer a full four-finger grip. What-

ever grip you use, the important thing is to keep the chisel steady so that the properly handled (grooved) hammer will always meet it squarely.

A hammer is said to be grooved when blow after blow goes through exactly the same path (the same swing) and the hammer is held so that the force of the blow is always directly down through the center line of the chisel to the work. That way you smash no knuckles, strike no glancing blows, and get the most work done.

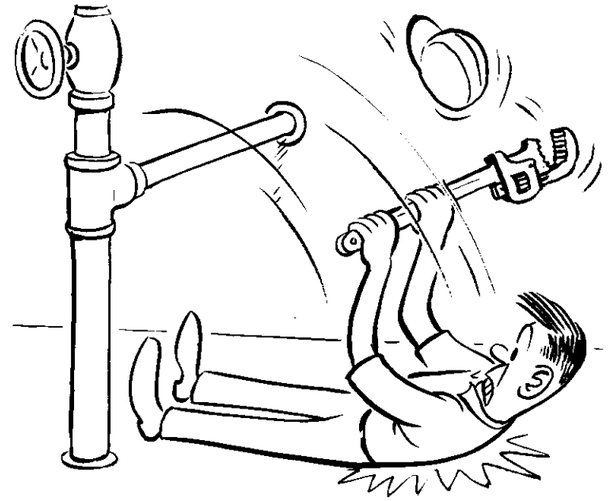
A properly balanced hammer with a handle the right size and shape to fit a man's hand right is easy to groove, but it takes practice. Once you've learned to groove your hammer and to hold your chisel properly, you'll never miss; the hammer will find the chisel every time.

Now we're ready to go after the rusted-in bolt. Don't forget to look out for your footing. You need good balance, and you can't keep it if your feet aren't solidly and comfortably placed. You need plenty of room for your hammer swing and hand and finger room to hold the chisel steady. You have to be able to see the work. And don't forget your eye protection.

If you have any choice as to which to cut off, the head of the bolt or the nut end, take the one that you can get at better and that will make it easier to drive the bolt out after it is cut off. That usually means cut off the nut end because many bolts are flared out a little at the head end.

There isn't much to driving the cut-off bolt out. The drift pin should be just a trifle smaller than the bolt. If it's much smaller and the bolt is well rusted in, it may just wedge the bolt in tighter. If it drives too hard, it's usually better to drill it out anyway, that is, if you have the use of an electric drill. A lot of safe practice and know-how is needed for that tool, too, but I'll talk about that another time.

One last point—before you start to work on that bolt, figure out which way any chips or the cut-off end may fly and be sure they can't hit someone.



A PIPE WRENCH JOB

It's rather surprising that there are so many accidents connected with the use, or rather misuse, of pipe wrenches. They look harmless enough. If you had never seen one and I handed you one and asked if you thought you could use it safely, probably you'd fiddle with it for a minute and say, "Sure. There's nothing to it. It looks safe enough to me." You'd be right, too. It's one of the safest tools if used correctly, but it seems to be so easy to use it wrong that a lot of fellows get hurt on pipe wrench jobs.

The trouble is caused not only by misuse of the wrenches themselves, but also by the nature of the places where they're most often used. The fellows who get hurt using pipe wrenches usually fail to provide a safe setup. It's not always easy to do because most pipes seem to be in places where it's tough to work —in pits and tunnels, close to ceilings, in places where clearances are small, where it's dirty, greasy, wet, or hot as blazes. And the joints that have to be broken are apt to be in the worst possible places. So it's often tough to play it safe, to look out for everything.

First, the wrench should be the right size for the pipe it's to be used on, if you're going to have good control and not damage the pipe. A wrench that's too small will not get a good grip, and the jaw will chew the pipe up trying. With a wrench that's too big, unless you go mighty easy, you'll put on too much pressure because of the leverage it gives you. The size is right when, with the wrench up snug against the pipe, the center of the movable jaw is a little beyond the center line of the pipe.

Be careful to have the wrench at right angles to the pipe. If it's a little bit cockeyed, it won't hold so well and it will chew away at the pipe instead of biting down on it evenly. Set the jaw opening to the diameter of the pipe. Then with one hand on the head of the wrench and the other well out on the handle, set it firmly on the pipe and bear down enough on the handle to be sure it has a firm grip. Then with both hands on the handle, increase the pressure smoothly, not with a jerk.

Right there is where a lot of fellows get

into trouble. If you don't have secure footing and keep yourself set against the joint letting go unexpectedly, plenty of things can happen, all of them unpleasant. Here's what happened to one fellow.

He was sitting on a beam over a sludge tank. He was to break a joint on a 3 inch pipeline a couple of feet in front of him and about the same distance above the beam. His foreman had told him to work from a ladder set against the beam, but he thought the beam was better. He set the wrench on the pipe and with his hands above his head was pulling toward himself—a perfect setup for going over backward if it gave suddenly. It did. He landed head-first in the sludge. It got into his eyes, up his nose, and nearly strangled him. He swallowed some and was miserably sick for three days. His eyes were bandaged for a week.

There are plenty of less serious accidents, too. Once in a while some fellow with more muscle than brains takes a hefty yank on the end of the wrench handle, it gives, and he gets it in the face. Then there are the guys who in close quarters wrap their fingers around the end of the handle and give it all they've got. The wrench slips or the pipe lets go, and the fingers get flattened against something hard, a steel column perhaps.

On each pipe wrench job, take a minute or two to look it over and figure all the angles. Where will you work from? How about the footing? What position will best let you use the force needed, yet protect you if something lets go suddenly? Usually it's safer to pull the wrench than to push it.

If you give it all you have and nothing happens, don't trot back to the shop and get a piece of pipe to slip over the handle to get more leverage unless it's a special wrench designed to take it. Ordinary wrenches are designed to take all a husky guy can give them with both hands at the end of the handle. They are *not* designed to take it with the extra leverage a 3- or 4-foot length of pipe gives. Under that kind of treatment, they're likely to let him down—or over backward—fast.

And don't forget your goggles, your gloves, and your safety shoes.

USING A STAR DRILL

Star drills are safe enougb in themselves, but just the same, men get hurt using them. Part of the reason is that they're often used in places where it's difficult to work—up on ladders or scaffolds, under ceilings, in close quarters, and so on. That fact gives a fellow who gets hurt an alibi but not a very good one, because in every case he could have kept from being hurt by using his head.

When you use a star drill you should always protect your eyes. If you're working in a place where the lenses would get dirty easily or fog up much, a face shield might be better than goggles. But something to keep the chips and dust out of your eyes is a must. Drilling upward is particularly bad. You have to look up once in a while at least, and that seems to be just the time when a lot of little pieces of mortar or brick let all holds go and dive for your eyes. Mortar can really burn them. Concrete is bad, too. And the chips can fly hard when you're starting the hole.

The head of a star drill has to take a lot of battering. The head mushrooms rather quickly and has to be dressed often if you don't want to stop a hard-hitting piece of it with your face once in a while. The safety-minded guy watches it and redresses it every time it starts to mushroom a little. The unsafety-minded fellow waits until pieces start to break off.

For fast, easy drilling, the center of the hammer face should meet the drill head squarely, with the direction of the stroke straight with the drill. That means that the hammer face when it hits should be exactly at right angles with the drill—exactly perpendicular to it. That's what is meant by "grooving" your swing. It takes a little practice, but it's worth it.

Most fellows learn to groove their swing just by pounding away at that old drill. They hit a lot of glancing blows that way, though, before they get the knack of it. They may smash a finger or two learning and sock tbeir hands some, besides. It's better to practice a while first. Decide on the best hold on the drill, the right grip on the hammer, and just

the right swing. Then practice until you have it.

Some fellows miss the drill head or hit it off center because the drill sticks and they tug at it and pull it out of line. The way to prevent this is to turn the drill only while the hammer is on the upswing. Then you can either hold your swing or go on with it in hope that the next blow will break the drill loose. It takes fast work with the drill hand and good timing, but once you get the knack it's easy. You should never tug at the drill without checking your swing.

Some men like to hold the drill with a special ratchet tool. It gives leverage to break the drill loose when it sticks and keeps your hand out of danger. It's harder to hold the drill straight with it than it is with your hand, though; so experienced men don't seem to take to it so well. Beginners seem to like it, and once they get the knack, make good speed with it. It can be very helpful in tight places and for drilling upwards.

Finally, just as in any other work in any sort of place, look to your footing. If you're working overhead, be sure your scaffold or whatever you're working from is safe. Doing a star drill job from an ordinary ladder is not a good idea. You need better footing than a ladder rung can give. So figure out a safer way—and use it. Don't take chances.

USING AN ADJUSTABLE OR END WRENCH

In grandfather's day, the good, old-fashioned monkey wrench was used everywhere for just about everything. The big family of wrenches we have today wouldn't have been practical then because nuts and bolts hadn't been standardized. Nuts came in all sizes and shapes. No mechanic's tool box would have been big enough to hold all the fixed jaw wrenches he would have needed. So he did his work with monkey wrenches of three or four sizes. By the way, they're called "monkey" wrenches because the inventor was Charles Monkey, one of the best mechanics who ever handled a wrench.

Now nuts come in standard sizes—not so many sizes but enough tbat a set of fixed jaw wrenches and two or three with adjustable jaws will handle most kinds of jobs. This standardization has helped safety a lot because having many different kinds of nuts and bolts made for confusion and bother and that always makes for accidents. When you know that your wrenches will fit the nuts just right, you can work faster, more surely, and more safely.

Nowadays all sorts of things are standardized. It's good for safety in a lot of ways. Wrenches are just one example. In the old days every mechanic was expected to be an "all round" man able to handle just about any kind of repair job. He learned his trade partly from an older mechanic and partly in the school of hard knocks. Safety first hadn't come yet—not in many places, anyway. As a result, you could usually tell old mecbanics by their hands—missing fingers or parts of fingers, stiff joints, big joints, scars, and so much grease and metal dust ground into the skin and under their fingernails that they never could get it out. A lot of them got badly hurt or killed, too. Those were rough times. What safety a guy knew he learned the hard way—by having accidents.

Things are different now. We still have accidents, but not nearly so many. Men still get hurt, but they don't need to. If they'll just follow the safe practices they're taught and use their heads, they won't get hurt.

The reports of accidents from work with

wrenches show two main causes—unsafe surroundings, and unthinking, sometimes downright foolish acts. In practically every case, you can either get rid of the hazards around the job or set the job up in a way to avoid them. And you can always act safely. It just takes a little planning, a little headwork, and some carefulness.

Whenever you have a job to do that calls for a wrench, take time to look it over and size it up. Can you do it from the floor? If so, will you have good footing and plenty of foot room? If it's overhead, where are you going to work from? You need a secure place, you know. When you're working on a stubborn nut up near the ceiling, you don't want to have to do a balancing act. So make sure you won't have to. If that calls for a scaffold, put it up. Is there anything you'll want to protect yourself against, like electric wiring or steam pipes?

Is there any delicate equipment that should be protected against you, like a gauge glass or a pressure gauge or perhaps a regulator of some sort? One fellow lost his eyesight when his wrench slipped and broke the water gauge glass on a boiler. He got a shot of water and steam with 190 pounds of pressure behind it square in the face. His face never did look right again. He didn't think to have that gauge glass cut out. He took a chance, and what a bum gamble it was.

What wrench or wrenches will be best for the job? Say, there are nuts of only three or four sizes to deal with, and they are all standard. Fixed jaw wrenches it is then, because the jaw sizes are set to give just the right fit on nuts of standard size.

If there are some special-sized nuts, adjustable jaw wrenches will be better. Keep in mind the fact that they're not as strong as fixed jaw wrenches. Also, you want to set them for a close fit. Place them so the pull is taken by the fixed jaws. An adjustable jaw can't take as much.

There really isn't much more to it, except go easy on a nut until you get the feel of it. Put on a little pressure. If it doesn't come, put on more but not with a jerk. And don't give it all you've got unless you're sure the bolt is big enough to take it. If you do, be sure to brace yourself so you won't do a ground loop if the nut lets go suddenly.

Use your safety-mindedness, and stay unhurt.

MASONRY CUTTING AND CHIPPING

Working with brick and stone (masonry) is one of the oldest trades and one in which there have always been a good many injuries. The work was probably done about the same way during the time of Christ as it was a hundred years ago. A stonemason who learned his trade in ancient Rome would have been able to set stone during construction of the Capitol in Washington.

Then came concrete and the development of modern construction machinery. From that time on, those old guys would have had to learn all over. The old ways wouldn't fit at all. These changes have brought new hazards of all sorts and very high injury rates. In construction work, though, injuries *can* be prevented, but it's not easy. To hold the injury rate down, the management and the men must cooperate closely and work hard for safety.

In spite of all this change, there's still a lot of cutting and chipping to be done by hand—the good old hammer and chisel way. And the way of doing it hasn't changed much through the centuries. We have steels that take the punishment better, but that's about all. Of course, when masonry is to be broken up, air hammers are used, but they're not practical for chipping or for most small cutting jobs.

This is another kind of work that doesn't look hazardous. It really isn't either, but men get hurt at it. That is, they do unless they follow safe practices all the time. Most fellows would probably say that any fool ought to be able to chip masonry without getting hurt. Sure, that's right. But men do get hurt just the same—not just fools, but all kinds of guys—because they don't use good safe practices all the time.

Part of the trouble is usually the place where the job has to be done. Mostly it's outdoors. If it's icy or cold, your fingers may stiffen up so that it's hard to grip the hammer right. Or you may have to work in close quarters or up on the face of a building. So it's easy to see why the accident reports show a good many falls and tumbles, banged heads

and shins and knees and elbows and hands.

It's not easy to hit the head of a chisel cleanly and hard when you don't have plenty of room or are in an awkward position. Having the hammer glance off something on the down stroke is a good way to get a trip to first aid and maybe to the hospital to have your hand patched up.

It's his attitude toward such situations as these that shows up the unsafety-minded fellow. He goes ahead without paying any attention to the hazards, and sooner or later he gets himself hurt. The safety-minded guy looks things over, makes the setup as safe as he can, and figures out just how he should handle himself all the way through. He *doesn't* get hurt, he makes a good job of it, and he usually finishes before the other kind of fellow would.

All such work calls for eye protection because there are always flying chips and small particles. They seldom hit very hard, though, so a face shield is O.K. if you prefer one. But be sure you *use* it. If you get a shot of dust on it or smudge it, it's natural just to push the shield up and go on working. That's another test of your safety-mindedness. Don't flunk it.

Safety shoes make good sense on all such work. So do hard hats, usually. And, of course, you need a good tough glove on the holding hand. It can make a lot of difference if you sock that hand. Some fellows can handle the hammer better barehanded. That's O.K. The important thing is to land every blow square and true on the head of that chisel.

Check your tools over carefully. Have a hammer that's the right weight. Be sure its head is on tight and the handle is sound. Use a chisel that's long enough to give you plenty of hand room. Be sure the head isn't mushroomed.

Look out for the other fellow, too. You don't want a chunk of concrete or piece of steel from your job to land in his eye, either.

ABRASIVE WHEELS

I wonder if you fellows realize how many injuries come from the operation of a kind of equipment we all use a lot and know or should know how to operate safely. I mean abrasive wheels—grinding wheels. We all use them. Every plant, every shop that works metal or uses tools has them. Even a home workshop isn't complete nowadays without one — the power-driven kind, not those little hand-crank things. It all adds up to a whale of a lot of wheels and, for the country as a whole, a lot of injuries. No one knows the exact figures, but we do know that there are altogether too many injuries. The accident reports show that nearly all such injuries come from unsafe practices.

Wheel explosions cause most of the deaths and serious injuries. Yet a nondefective, properly mounted wheel run at the speed for which it was designed and properly used will *not* explode. It's abuse that does it.

Overspeed causes most of the explosions. About 6,000 feet per minute is O.K. for most grinding jobs, but for cutting, much higher speed, such as 16,000 feet, is needed. Even at 6,000 feet a good chunk of wheel can land an awful wallop. At the speeds at which most wheels will explode a piece of wheel might fly with close to the speed of a bullet. So it's easy to see why a wheel explosion is apt to mean curtains or rest in a hospital for anyone nearby.

Overspeed is usually the result of some fool mistake, the sort of thing that just a little forethought would prevent, like replacing a worn 12-inch wheel with a 20-inch one made to run at the same rim speed. The 20-inch wheel would probably let go, if not at once, a little later under the stress of grinding.

It's easy to check the maximum speed a wheel should travel. The manufacturer's recommended safe speed is shown on the wheel itself.

Sometimes more speed is wanted for something else driven from the same motor. A bigger motor pulley goes on. Or the machine has a two-speed drive. The wheel wears down and is put on high speed. When it's worn out,

a new full-size wheel meant to run at the lower speed is put on, but the guy forgets to cut the speed. Then there's trouble.

Portable wheels are apt to get a lot of punishment. A fellow in a hurry is likely to slam the machine down or fail to make sure it has come to a full stop before he does put it down. Also, portable wheels fall off things easily, and someone's apt to run into the cord and give the wheel a tumble. So have a safe place for that portable, and be careful how you lay it down. At a bench you can use a special holder. Make sure, too, that no one can trip over the cord.

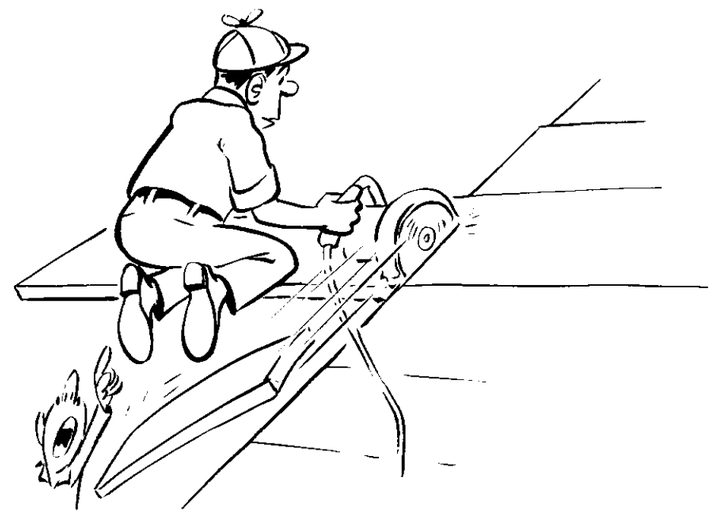
If you want to gouge a chunk out of a wheel, a 16-incher, say, move the tool rest out about an inch, and go ahead with grinding a big nick out of a 12-inch chisel. There's a good chance that it will catch between the rest and the wheel, and you'll get your chunk of wheel right in the breadbasket. Or the chisel, and your hand with it, may be whipped against the wheel. It can happen awfully fast, you know. If you want to avoid accidents like these, keep your rest up close, as close as you can without its touching.

Now and then some fellow wants to do some side grinding and doesn't have a wheel suited to it. The flanges are too big for this job; so he takes one off and puts on a smaller one or mayhe just a nut large enough to hold the wheel. That's *really* a fool thing to do. It throws the wheel off balance and causes overspeeding to boot because the flanges give the wheel most of its support. And side grinding on a wheel not meant for it wears the wheel away where it most needs its full strength—just beyond the flanges.

The eyes suffer most of the injuries reported from use of abrasive wheels. There's no such thing as a wheel that won't throw particles—that is, if it cuts. Even a water spray may not catch them all. Glass shields help a lot by deflecting the particles downward, but some bounce back off the tool being ground or the tool rest. No matter what the setup, no one has any business doing a grinding job without eye protection. We'd all realize that if we only knew how many particles of steel and wheel fly off from even the smallest job and if we could see those particles with their sharp, jagged edges under a powerful microscope.

Most of the particles don't fly very fast. They land on the surface of the eye as a speck of dust does, and the tears wash them away. But now and then one sticks and has to be taken out. That's a job for the nurse, or, if it doesn't come out easily, for the eye doctor. If he has to cut it out or if you delay going to him until it becomes infected, you're in trouble. So *always* wear eye protection when you use an abrasive wheel.

That's not all there is to safe grinding, but we've covered the main points. If you always follow them, you won't be far wrong.



PORTABLE ELECTRIC SAWS

Fellows, I hope that not too much of what I'm going to say today applies to any of you, but if it does and you take it to heart it will help you keep all your fingers. I'm going to talk about misuse of portable electric saws. The injury reports indicate that they are misused, rather than used, most of the time.

Portable electric saws are piling up quite an injury record—one they don't really deserve. Treated right, they're pretty decent. Treated wrong, they're pretty dangerous.

A respectable portable electric saw has a fixed guard over the upper half of the blade and a telescoping section that covers the portion of the blade that is in the cut. It also has a dead-man control. That's a pistol grip kind of trigger that you press to start the saw and release to stop the saw. A saw without both a fixed guard and a dead-man control shouldn't be used at all.

Now here's where the misuse comes in. A lot of fellows think the telescoping section of the guard is a nuisance. You have to push it against the wood just right for it to open up and let the saw get to work. Also, the guard keeps you from seeing just where you're cutting—you can't follow the line of cut. There's a pointer on the guard that you're supposed to keep in line with the guide line you've marked on the wood, but that method isn't very accurate. It's hard to hold to the line, and you get a wavy cut if you don't. Worse still, fine sawdust is apt to get into the works and, especially if it's from pitchy or green wood, make the telescoping section move hard and finally stick wide open.

What do our unsafety-minded friends do about all this? Perfectly simple. They just wedge the guard wide open and go on with their sawing. That makes a perfect setup for the saw to cut off a finger or two or maybe cause worse injury. A pair of examples will show you what I mean.

A couple of carpenters were given the job of putting up a small shack about fifty yards from the nearest source of power. So they ran out a long cable and tied the socket end of it to a heavy stake. Then one of them plugged

in his portable power saw. He probably forgot that he had tied the trigger so it was kept in the running position. He said afterward that it was too tiresome to hold it all the time.

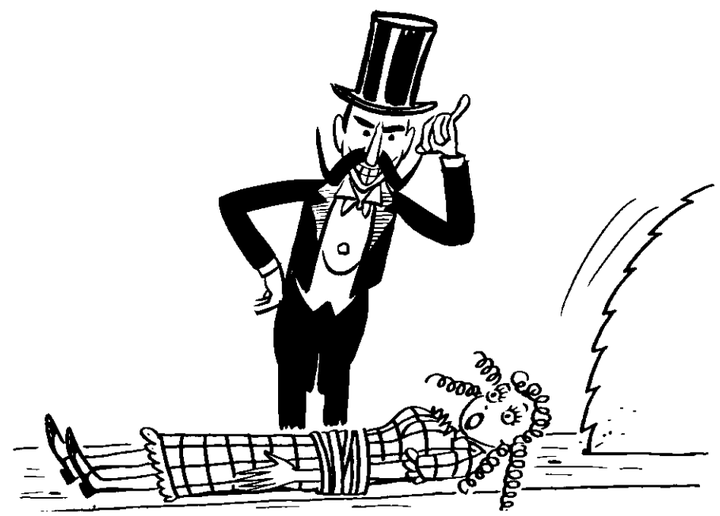
When he plugged the cord in, the saw started bouncing around on the ground. You see, he had wedged the guard back, too. Instead of pulling the plug, he grabbed for the saw and missed. It got the trigger and middle fingers on his right hand. What a price to pay for laziness!

The saw blade and its mounting is heavy enough so that the blade runs for a while after the trigger is released. This next example shows why the guard should never be wedged back and should always be kept in smooth working condition. A carpenter was cutting the end off a short piece of 1 by 8. He laid it on a sawhorse and held it with his knee as you do with a handsaw and went ahead. The guard had got fouled up so he had pushed it wide open where it hung. About half-way through the cut, the board wobbled. He fumbled the saw and dropped it. The teeth caught his right leg about half-way below his knee and cut into the bone most of the rest of the way before the blade stopped turning. If the guard had been working right, he might have received an injury, but not nearly as severe.

A portable electric saw is very useful in construction work and for all sorts of small sawing jobs where accuracy of cut isn't important. It isn't too good at ripping. It's almost impossible to make a straight cut in ripping without using a guide. Usually though, a 1-inch strip can be nailed to the piece to be ripped. The piece, in turn, can be nailed along the edge of a workbench or to a sawhorse, and the saw can he run tight against the guide. A lot of trouble, you say, and you're right. Better drag out the old push and pull handsaw for short ripping jobs.

If you use a portable power saw—or any other portable electric tool—outdoors, be very careful about getting it wet. If you do, you're apt to get a ground—the frame will become live. If your feet are wet, it will be a lot easier for that electric current to escape through you to the ground than it will be for it to turn the saw. Men have died that way. The best assurance against receiving a shock would be to provide a third wire from the case to the ground. This would provide a path of less resistance than through your body.

So whenever any of you fellows use a portable electric saw, treat it right and it will treat you right.



WOOD SAWS—TABLE RIP

No fully satisfactory guard has ever been developed for the ordinary wood table saw because so many different kinds of jobs are done on these saws. Each kind of sawing job can be very well guarded, but no single kind of guard will handle all kinds of jobs. So anyone using a saw must be sure he knows the safe way to perform each operation and must always do it that way. Bear in mind that wood table saws probably cut off more fingers than any other kind of machine does.

First, when you have a sawing job, look to your footing. Make sure that the floor isn't slippery and that there's nothing for you to stumble over. Place your feet securely and comfortably, and see that there's nothing loose on the saw table to get in the way.

Next, check the guard. If it's the kind that rides on top of the work, as it should be for all ordinary sawing, particularly ripping, see that it moves up and down freely without side play. If the guard has antikickback dogs, and it should, see that they move freely and are sharp so they'll dig into the stock if it starts to kick back. If there's a spreader, and there should be, see that it's close to the saw teeth, stiff, and well secured. Check the guide (fence) to make sure it lines up perfectly with the saw blade, and set it for the cut you want.

If you have more than a piece or two to rip, have the stock on a hand truck or stand, placed so you can reach it easily from your position at the saw table. Start the saw up, and see that it runs smoothly and quietly. If it doesn't, don't use it until the trouble has been corrected. If you do, it will probably heat up and run snaky and the teeth may catch in the work. That spells trouble. Your hand could be dragged into the saw or, if the antikickback dogs don't hold, the piece being sawed could be thrown right back at you—hard.

Take the right position at the table—far enough out of line with the saw blade for a kickback to miss you, but not so far that it's awkward to feed the wood through. In some shops, an extension is added to the saw table

so the operator can't stand directly in line with the saw blade, and so long stock can be controlled more easily.

Unless you have seen a kickback, you don't realize how vicious one can be. Those saw teeth are moving at not less than 10,000 feet per minute, perhaps nearly double that. The teeth at the top of the saw blade are running toward you. If they get caught in the wood, they'll shoot it right back the way it came. If you're in the way, it's just too bad.

Saws don't kick back if they're treated right. A properly mounted saw blade in good condition, if used correctly, will cut its way cleanly through the wood. But if you don't feed the wood in straight, it will get against those up-running back teeth, and they're apt to grab it, lift it up, and throw it right back at you. Another good way to insult a saw is to feed green or twisty wood through it without a spreader right behind the teeth to keep the stock from binding on them. The antikickback dogs should be there too, though, because the wood might get against the teeth before it reaches the spreader.

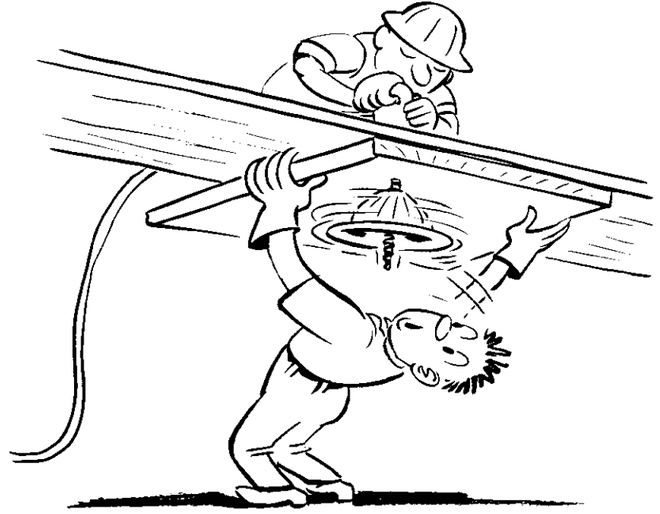
Some fellows will tell you that the way to prevent kickbacks is to keep the saw as low as you can and still have it cut through the wood. They're right if those teeth are in first-class condition so they'll cut clean and if the stock is fed straight. But if the teeth do catch, they don't need to lift the wood to throw it. In that case, it's all up to the antikickback dogs.

Others say to keep the saw as high as possible, if the guard will prevent the back teeth from lifting the piece high enough to throw it forward. Of course, with thick lumber there may not be leeway enough for that. Anyway, be sure that stock doesn't bind on those teeth.

Feeding the lumber into the saw is the touchy part. It looks easy and is, if you use care. But it's easy, too, to do it wrong and get into trouble. Keep your mind on the job. Place the front end of the piece on the saw table against the guide and, being careful to hold it straight, slide it smoothly ahead along the guide to and through the saw. Be sure to keep it against the guide all the way through. Don't worry about the line of cut. If you've set your guide right and use it as a guide all the way, the cut will be right.

Always keep your hands a safe distance away from that saw blade—at least 6 inches, and preferably 12 inches. You can do so by using a push stick. If the stick is made right to fit the lumber and has a good handle, you can do a better job with it at the finish of the cut than you can with your hand.

Finally, don't crowd the saw. A saw blade in good condition will take the wood easily. It will almost feed itself. If it doesn't, there's something wrong, and until it's fixed you'd better use the old handsaw.



PORTABLE ELECTRIC DRILLS

A portable drill can be dangerous if you're not careful with it. That dull point can dig into flesh mighty fast; so don't let it get to you. It sounds foolish and it is, but the accident records show plenty of cases in which some guy drilled a hole in himself—usually his leg.

It seems to happen most often when a fellow lays the drill down for a moment and then reaches for it carelessly, fumbles it toward himself, and presses the trigger without intending to. One fellow ran a 3/8-inch drill into his leg full length that way. At the first stab of pain he just gripped harder instead of letting go. He froze to the controls.

There are other ways in which electric drills deal out injuries to guys who don't use enough safety-mindedness. Sometimes a heavy drill will throw chips of the material being drilled right at the operator's eyes. If the drill isn't held just right, the drill may break and the pieces may fly.

If drills are treated rough—dropped or banged around—or if they get wet, the insulation is likely to weaken so that the frame becomes live. If that happens when a fellow is standing in a wet place or is all sweaty or perhaps sitting on a steel beam or a steel floor plate, it can mean a fatal shock. Even a little shock when you're drilling into something can be plenty bad.

When you have a drilling job to do, look it over carefully and figure out all the angles. Decide just what you should do to take care of all the hazards that might be involved. Work out the safe way of doing the job. Get all the answers.

Look the whole tool over. Is it clean? If it's dirty or rusty, the tool room men have probably slipped and it had better go back to them for an overhaul. Does it have a ground wire? It should. Is the extension cord in good condition? Work the trigger and be sure it works well—neither too hard nor too easy. Be sure that it will cut the power off at once when you let up on it.

Make sure you have good footing. When you're moving around with a drill in your

hand, it's a bad time to stumble; so don't allow any loose objects to lie around on the floor. Decide how you want to protect the extension cord so no one can trip over it. It isn't funny to have an electric drill jerked out of your hands. The record shows that it's a good way to get hurt. Sometimes the fellow who catches his toe under the cord gets hurt, too.

Be careful to get the drill straight in the jaws. Hold the drill up so you can get a good look at the end of the drill, glue your eye to the point, and turn it on for a moment. It should run perfectly true without any wobble. If it doesn't, either the drill itself isn't straight or it's in crooked. So try again.

Now comes the part of the job that takes steadiness and care. You have to start the hole at just the right angle and keep it right. If you don't, as soon as you've drilled in a short distance, you'll probably bend or break the drill. Be careful when you put the pressure on. A drill in good condition will take hold without much pressure.

Of course, a good deal depends on the hardness of the metal. Very soft metals like copper or aluminum will cut like cheese with very little pressure, but the drill must be right for them. Hard steel takes a different drill and more pressure, but too much will make the drill overheat and bind. So take it easy until you learn the trick of it. The drill not only has to go in straight; it also has to come out straight, too, or you will bend and maybe break it.

Find a safe place to lay the tool down, and put it there each time you are through with it for a moment. The best method is to have a hanger for it up out of the way but within easy reach. Don't leave it lying around for any length of time connected to the source of power. Take the drill out when you're through. Don't carry the tool around with the drill in, not even back to the tool room. Guys have been stabbed that way. It's easy to do with a small diameter drill.

Just use your heads, and you'll get along O.K. with electric drills.

PORTABLE ABRASIVE WHEELS

Portable abrasive wheels have most of the hazards of the wheels mounted on fixed stands. The fact that they're portable makes them more hazardous in some ways. They have to take lots of punishment because they get banged around and dropped. Unless the wheel has already stopped before it's dropped, it's apt to jump around some and that's not so good.

If portable wheels are properly mounted and used right, you won't get hurt, but if you misuse them, you're apt to. The biggest danger is that the wheel may explode. It's probably running at 2,000 or 3,000 rpm, and if you bang it into something or give it a good blow it's apt to let go. Don't forget that those chunks from an exploding wheel are plenty hard and have sharp corners. They can crack your skull and tear your flesh.

Overspeed can explode a wheel, too, but you can hardly overspeed a motor-driven wheel unless you mount an oversized wheel on the grinder, for instance, put an 8-inch wheel on in place of a 4-inch one. You'd get twice the rim speed that way, and the wheel would probably let go. Of course, you'd have to take the guard off to put the 8-incher on, and that *would* be a fool thing to do, for sure. It's been done, though.

You should never use a portable grinder on any ordinary grinding job without a guard. The guard should cover at least half the wheel. See that it's secure and set to give you the best possible protection if the wheel should let go. Always handle the grinder and yourself so as to keep the guard between your face and the wheel. That can mean the difference between getting a chunk of wheel in the face and merely hearing it zip past you. The guard will turn a lot of the dust and sparks away from you, too. Without a guard you'd eat plenty of it.

Suppose we run through the safe way to do a job with a portable grinder. First, check the tool over carefully. Is the cord in good condition? Is the guard on tight? Are the washers full size? They should just cover the paper washers that are glued onto the wheel. Does

the trigger work right? Does it cut off the juice when you take your finger off? Does the wheel run smoothly and without vibration?

If the answer to each of these questions is "yes," you're ready to get on with the job. Or are you? How about your goggles? Safety shoes, too? You shouldn't drop that grinder, but you might, and a grinder dropped on your toes would make them plenty sore for a while.

Next, check the "surround," the area around the job. If there's anything loose underfoot, pick it up. If there's anything you can't pick up that you might trip over—like a pipe—notice where it is and keep clear of it. Then decide where you want to run the extension cord. You don't want anyone to trip over it or interfere with it, and you don't want to get your feet tangled in it. The record shows that an extension cord which isn't safely out of the way is practically a sure-fire device for causing injury, usually to the guy with the grinder. If the cord isn't long enough to run it where it's safe, get another and hook it up. Don't take chances with that kind of trouble.

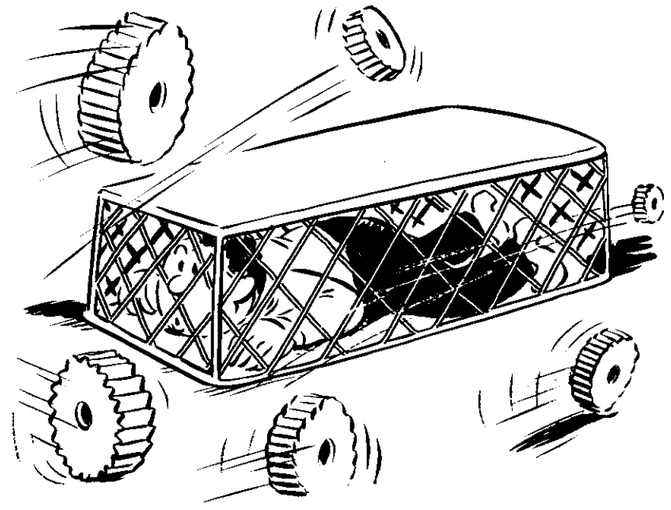
All this preparation doesn't need to take long—probably not as long as it has taken me to run through it. Anyway, it would be worthwhile no matter how long it took.

Now you're ready to do your grinding. Keep a firm hold on your grinder. You not only want to hold it steady, but you also want to be able to apply just the right pressure with it—the right touch. You know, of course, how important the right touch is in sharpening a tool on a stand grinder. It isn't hard to get the knack, but it does take a little care and some practice.

Some portable grinders are run by air. If you use that kind, make plenty sure that the governor works. Hold the wheel up and away from you, and press the trigger. The wheel should come up to full speed smoothly and run smooth with a steady hum or whir. If the tone isn't steady, it isn't right. Don't use the tool until it's fixed.

If your grinder is powered by electricity, be sure to ground it, especially in wet places.

Finally, treat your grinder with respect. The wheel is brittle. It doesn't like shocks. Lay it down carefully where it will be safe every time you stop your grinding. Respect it, and it will respect you.



GUARDS

Fellows, I've been studying accident records again. I mean from all over the country, not just in this plant, the kind of dope the National Safety Council and some of the state labor departments put out. A lot of serious injuries occur every year when fellows get caught in machines. When I got to thinking of all the attention that's been given through the years to guarding, in this plant and in plants everywhere, it made me wonder how come so many injuries from this source. I decided to find out. I found some of the reasons.

Guys get hurt mostly because they don't seem to believe that an accident can happen to them until it does. It's the same way with guards. Most of the fellows who lose hands or fingers or other parts of themselves by getting caught by machinery left the guards off or took them off or misused them in one way or another. And they give all sorts of fool alibis afterwards. Let's take a good look at some of them.

"The guard slowed me down" alibi is used a lot. Maybe it did. But would any management sacrifice production unless it was sure such sacrifice was necessary? Production is what we all get paid for. If a guard goes on that really does slow the work down, a fellow should figure, "They must kinda like me. Look, they're even willing to take less production rather than risk getting me hurt. Guess they really mean that safety first stuff."

In most cases, though, that alibi is phony. The guy is kidding himself. Usually, the real truth is that to use the guard properly he has to change an old habit. No one likes to do that because it takes some effort—some will power. So what does the guy do? He beefs about it, takes the guard off or ties it back or mistreats it in some way. As long as Lady Luck is with him, he gets away with it. But one day that unreliable lady lets him down and he gets it—and he brings out his alibi. The funny part of it is that if he had put his mind to it and learned how to work *with* the guard instead of fighting it, he would have found it both safer and faster than the old

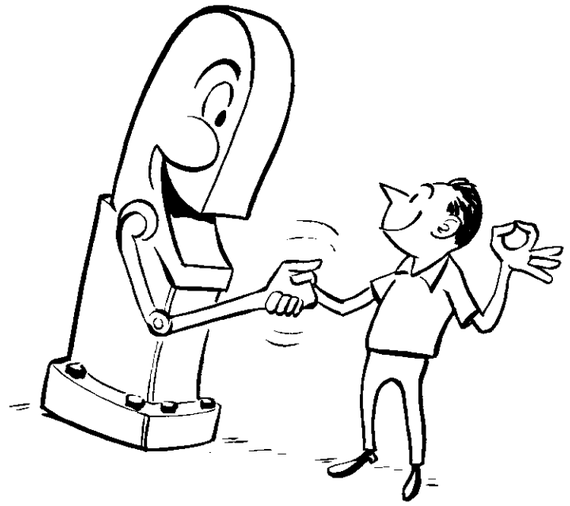
way. And he'd have kept his fingers or whatever it was he lost.

The "Couldn't use the guard" alibi sometimes isn't phony itself—if, for instance, the fellow was dadoing on a table saw. But the idea that he couldn't safeguard the operation *is* phony. You can always rig up a jig for a dado job that will keep your hands a safe distance away from the cutter and also prevent a kickback. The fellow who uses that alibi is just lazy. He bets his hands, maybe his life (for kickbacks can kill) against a half-hour's time and a little brain work. How foolish can a guy be?

The "I wanted to try it out first" alibi is a favorite with setup men and mechanics who get caught running machines before they've put the guards back. That's betting a lot of suffering and future earnings and misery for their families against a little extra bother.

The "I didn't have time to put the guard back right then" alibi is used by mechanics when someone gets hurt because they haven't put a guard back after a repair job. It happens a good deal with belts and gears and shafts—machine drives. Sometimes the mechanic is called over to another breakdown before he has replaced the guard. In that case his boss uses the alibi. Sometimes, though, the mechanic had something else he wanted to do first. Sometimes he just plain forgot. Anyway, one thing is certain: he sure wasn't thinking of the other fellow's safety. I wonder how it would be to have to live with the knowledge that you had caused some man or woman to lose a hand? I think I'd hate myself from then on out.

I didn't think up those alibis, fellows. They all came from accident reports of injuries resulting from misuse of guards. I've given you only the four that I found most often. It all adds up to the fact that guards can't do the whole job of protecting you against injury on machines. They must be used and used right: you must work with them, not against them.



KNOW YOUR MACHINE

You have to know your machine if you want to keep it from hurting you. It won't if you know it thoroughly—know its hazard points and exactly how to avoid all of them. And, of course, if you keep them in mind. That doesn't mean being afraid. Just the opposite. If you really know your machine and know how to operate it safely, there's no reason for fear.

Whenever you operate or work on any kind of power-driven machine, you should keep clearly in mind the fact that it *can* injure. In fact, every kind of machine used in industry produces its share of injuries. I used the word "produces" instead of the word "causes" on purpose. The injury is almost always caused by some unsafe act by the fellow who gets hurt. Sometimes the reason is simply that he has failed to do something he should have done.

Here's what I mean by hazard points. They're places where you might get hurt. Every moving part — every part moved by power, that is—is a hazard point because if it catches you, it can hurt you. Of course, everybody knows that all tools and parts that cut or shape metal or wood can just as easily cut or crush human flesh and bone. Yet year after year a lot of men suffer these point-of-operation injuries. They almost always result from failure to keep the hazard clearly in mind. Here are a few examples.

1. A lathe operator reached close over the rotating work for a tool he had left on the back of the lathe bed. His shirt sleeve caught above his elbow. His arm was pulled in and broken.

2. A punch press operator was feeding blanks down a guide into a slow-speed forming press. She removed them with tongs held in her right hand. A blank got out of position, and she made a quick stab at it with her left hand. She lost two fingers.

3. An experienced wood worker was cutting 6-inch blocks from ½-inch by 3-inch stock on a swing saw. He held the stock with his right hand and handled the saw with his left hand. On the last cut he brought his right

thumb up too far forward on the stock and sliced it off at the base of the nail.

In each of these cases the person hurt knew better. He just didn't think. All such cases as these—and they happen right along—result from failure to keep a keen sense of danger. So if you work on a machine, make sure you know exactly where the hazard points are and don't forget any of them for a moment.

It isn't enough to watch out for the point-of-operation hazards. Most machines have other moving parts. Their hazard is low, but they generally look more harmless than they really are. Anyway, don't crowd them because they do bite sometimes. The record proves it.

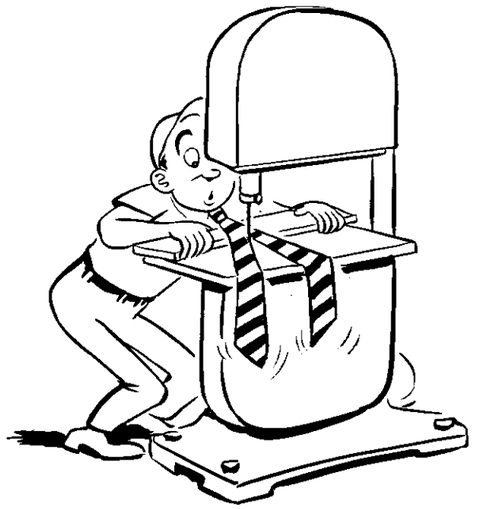
Clothing can get caught on almost anything that moves, even a small highly polished shaft, if you lean up against it or get a shirt sleeve into it. Many women have learned the hard way, too, that any moving part can catch long hair. This kind of accident has even happened to men who bowed a head in need of a haircut into a drill press spindle or a small shaft.

Whenever you are put on a machine job, you will, of course, be shown exactly how to operate the machine — how all the controls work—what the hazards are—what is the safe way to do each step of the job—what things not to do. If you are experienced on the machine, you should still try it out carefully. Go over the controls. Put it through its paces. Make sure everything is right. Look to your footing. See that there's nothing to trip over. Have a safe, convenient place for each tool and each part you will use. And don't forget your eye protection and your safety shoes. Leave your gloves in your clothes locker. Wear a short-sleeved shirt and neat-fitting clothing.

Be proud of your machine, and show that you are by keeping it clean and neat and treating it right. It deserves your respect. A tremendous total of years, brains, and experience is back of it.

Respect the other fellow's machine, too. A lot of people have been hurt because they fooled around with another guy's machine. They thought they knew how to run it safely, but found out they didn't. Sometimes, too, a person goes over to talk to someone at another machine and gets up against a moving part and gets hurt, or causes the other fellow to get hurt by distracting his attention. So respect your neighbor's machine, also.

Don't let your machine get you.



WOOD CUTOFF AND BAND SAWS

Wood table saws have the blackest record among the saws. Or perhaps I should say that the guys who operate them pile up the worst score on them. It's awfully easy to forget how fast those teeth are moving and how quickly they can cut. Fingers get cut off by cutoff saws and band saws, too, but not so often, probably because they aren't used for so many different kinds of sawing jobs as table saws are.

There are three kinds of cutoff saws—those that swing from overhead, those that run on a rail, and those that swing from below. The guys who saw their hands up with cutoff saws usually pull the saw right onto their hands. That's easy to do if you stand in front of a hand-operated saw. Then the hand that holds the wood is close to the saw, and it's easy to get your hand over too far, especially your thumb.

If you stand to one side of the saw, work the saw with the hand that's closer to it, and feed the wood in with the other, both hands are safe. If the pull handle is to the right of the saw, you should handle it with your left hand and feed the wood with your right. If the handle is to the left of the saw, you should operate it with your right hand and feed with your left.

The underslung saws are the most hazardous because they are operated by foot treadles. Also, they come forward awfully fast. They're mighty handy, though, for cutting knots out of narrow stuff like flooring without waste. To do that kind of job, you have to sit in front of the saw with one hand on either side of it. To do the work safely, real care is needed to keep hands in the clear while placing the stock correctly.

If you use one of these saws, work slowly at first. Form the habit of always having at least 8 inches between each hand and the saw. Also, get the habit of checking the position of both your hands for each cut before you trip the treadle.

One more habit is mighty important, too. Always take your foot off the treadle at once after you've tripped it, and pull your foot

clear back away from it. If you don't, you're apt to trip it when you don't mean to. If you do that, it's probably "goodby, thumb." Experience has taught us that one.

It takes care and practice to form these habits, but unless you do you'll probably pay with a thumb or finger or maybe both. And even if you form these safe habits and operate these underslung saws right along, you must still watch yourself. Don't let yourself slip. You want to keep those fingers and thumbs.

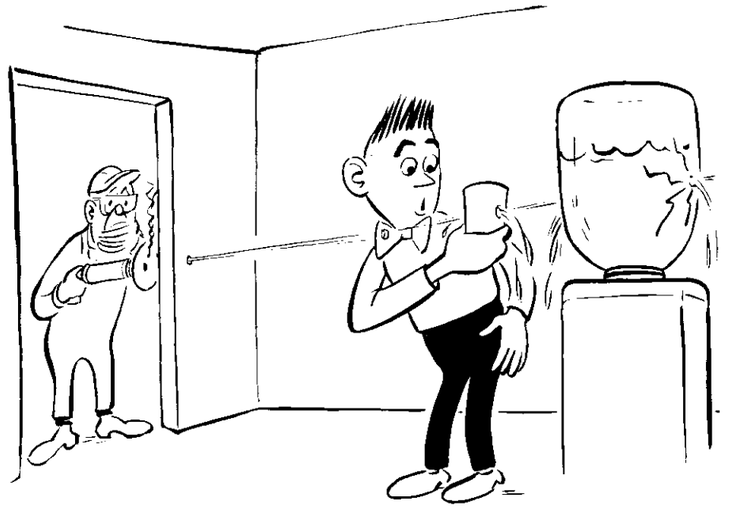
Band saws make fewer cuts on the guys who use them than cutoff saws do. The reason is that the saw doesn't come forward to cut; you feed the wood into it. You have to keep your eye on the place where you're cutting, and you naturally keep your fingers back away from the saw. At least, that's what anyone would think. It doesn't always work that way, though.

Most of the injuries on band saws come from overconfidence. At first a guy is careful because he's naturally a little afraid of that saw. But in time he's apt to get too sure of himself. Something takes his attention for a minute. He takes his eyes off his work (for just a second, he thinks), but he doesn't take his hands away. He fails to stop feeding, and the saw gets its bite at his hand. He loses a finger or two maybe, or perhaps gets just a neat slice between thumb and forefinger.

The accident reports show us what the safe way is. It's just a matter of forming the right habits. Figure out the safe way and use it every time. Watch yourself to see that you don't make a slip. Neither hand should ever get closer than 6 inches to that saw blade—8 inches would be better. Form that habit and keep it. If the piece you're sawing is too small to give you that much leeway, use a jig of some sort. Usually that's easy—just nail the piece onto a larger piece. Use your head to save your fingers.

Of course, before you use a saw, look it over to make sure that everything is O.K.—no loose stuff on the saw table or underfoot, guards O.K., light O.K. Start the saw, and make sure that it runs smooth and sweet. Take a comfortable stance, and go to it.

And watch those hands and all those fingers. You want to keep them.



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STUD GUNS—POWDER ACTUATED TOOLS

Powder actuated tools are guns, fellows, and they must be treated like guns. A careful man who values and respects his gun treats it as a fine tool, to be used carefully and correctly, never in any way that may hurt any person or damage the gun.

Stud guns can shoot as hard as most rifles. It takes as much power to drive a steel stud into steel or concrete as it does to kill a deer. If you use one of these tools, never forget that fact for a second. If you do, you're likely to kill someone. That wouldn't be a pleasant thing to live with. And never forget either that just like a rifle, a stud gun can shoot clear through walls that aren't good and solid, like any ordinary partitions, or sheet iron, or plywood. Men have been killed that way.

If you're going to use one of those guns, he sure you learn all the angles first. There are several makes of stud guns, and no two are quite alike. First, you'll want to study the manufacturer's instructions very carefully. Be sure you understand them and know them thoroughly. Then one of the fellows who know the ins and outs of these tools will spend some time with you. Be sure you understand all the dope he gives you. Ask questions until you have all the answers.

O.K. You know how to use a stud gun, and you figure you're ready to go ahead. The studs won't penetrate hard steel or cast iron or hard rock. So don't try to use a stud gun on those materials.

What are you going to drive studs into? Is it a solid concrete or brick wall? Is it a partition? If it is, how solid is it and what is it made of? Will it stop the stud for sure? If you're in doubt, get out your star drill and put a hole through it to find out. Tap the wall with a hammer, wherever you want to drive a stud, to find out whether it's solid or hollow. If any studs might go through, better back that place up with something that will stop them, such as good solid planking.

Now that you know what you're driving into, you can select the kind of cartridges that will be right for the job. This is very impor-