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FOUNDRIES

NINE-THIRTY A. M.

Chairman—Peter E. Rentschler, Hamilton Foundry & Machine Co., Hamilton, Ohio.

Vice Chairman—Harold Segraves, American Radiator & Standard Sanitary Corp., Elyria, Ohio.

Secretary—John F. Lacey, Commercial Steel Foundries, Inc., Marion, Ohio.

"Safety Is Simple":
Ray O'Connell, Insurance Commissioner, Ohio Steel Foundry Co., Lima, Ohio. Discussion.

"Silicosis":
Dr. John Skavlem, Assistant Professor, College of Medicine, University of Cincinnati; Past President, Academy of Medicine, Cincinnati, Ohio.

METALS

Power Press Session

NINE-THIRTY A. M.

Chairman—E. H. Meeks, Transue & Williams Steel Forging Corp., Alliance, Ohio.

Vice Chairman—Edward Mandry, Republic Steel Corp., Bolt & Nut Div., Cleveland, Ohio.

Secretary—A. B. Waugh, Jones & Laughlin Steel Corp., Otis Works, Cleveland, O.

"Practical Methods in the Elimination of Machine Hazards":
P. G. Leeper, Safety Supervisor, Republic Steel Corp., Bolt & Nut Div., Cleveland, Ohio.

Discussion.

"Safety in Your Job Training Program—How and Why":
W. T. Cameron, Chief Safety Advisor, U. S. Department of Labor, Division of Labor Standards, Washington, D. C.

Discussion.

Report of Nominating Committee.

MINING

NINE-THIRTY A. M.

Chairman—William Roy, Jr., Hanna Coal Co., St. Clairsville, Ohio.

Vice Chairman—J. J. Jurgens, Robinson Clay Products Co., Uhrichsville, Ohio.

Secretary—Thomas Price, United Mine Workers of America, Columbus, Ohio.

Welcoming Remarks:
Marcus Kerr, Chief, Division of Mines, State of Ohio.

Introduction of Speaker:
John Owens, President, District No. 6, United Mine Workers of merica, Columbus, Ohio.

Address:
Percy Tetlow, President, District No. 17, United Mine Workers of America, Charleston, West Virginia.

Introduction of Speaker:
R. L. Ireland, Jr., President, Ohio Coal Association, Cleveland, Ohio.

FOUNDRIES SECTION

Wednesday Morning, April 21st

Chairman Rentschler: Wi'l you men please come to order for the Fourteenth Annual Foundries Session Section of the All-Ohio Safety Congress?

We are quite gratified to see this many people here who are interested in the Foundries Session, in view of the present day conditions of the difficulties of travel and the difficulty to take time out.

I would like to introduce Mr. Harold Segraves of the American Radiator and Standard Sanitary Corporation, Elyria, Ohio, who is vice-chairman of this section. Mr. Segraves. (Applause.)

Then I would like to introduce the secretary, John F. Lacey, Commercial Steel Casting Company, Marion, Ohio. (Applause.)

I don't think there is any need for me as chairman to try to make any comments on the speakers that are to talk to us today. I think we have two excellent subjects and two excellent speakers with messages that will be of vital interest to all of us, so without any further ado I would like to introduce Ray O'Connell, Insurance Commissioner of the Ohio Steel Foundry Company, Lima, Ohio, who will talk on the Induction of New Employees. The subject as listed on the program is Safety is Simple but Mr. O'Connell will cover this subject in the matter of his routine for the Induction of New Employees. Mr. O'Connell. (Applause.)

SAFETY IS SIMPLE.

MR. RAY O'CONNELL, The Ohio Steel Foundry Company, Lima, Ohio.

Mr. Chairman, Fellow Foundrymen, Friends of the Foundry Section:

While Mr. Rentschler was making his introductory remarks, I was thinking, "how shall I introduce myself?" Thoughts carried me back home. After moving to Lima, Mrs. O'Connell decided we were spending too much money and should go on a budget. I agreed it was the proper thing to do. At end of week she asked me to inspect it; it was in perfect order—nice penmanship, additions correct, but I noticed an item marked G. O. K., amounting to $6.20. At second week end, praised her neatness and style, and noticed item G. O. K., had increased to $12.40. At end of third week all was in order except item G. O. K., had increased to $16.60. As this was a decided increase, asked what expense G. O. K., represented. With an expression of hesitation and sorrow she said, "God Only Knows." (Laughter.)

For many years it was said, God only knows what causes accidents, and He will not tell. Folks, today we do know the cause of accidents. We are having this visit to prepare you people to work in the ways we ask of you. Forgetting those you love at home you are now with your best friend, your Safety Engineer, whose duties are to keep you in good health and free from injuries and accidents, especially during the duration. Will prove to you, if you will only do the things we ask of you, we will definitely guarantee you will retain your good health, keeping you free from injuries and accidents.

When you cross the threshold of your home, no matter what your walk in life may be, your greatest treasure, your greatest blessing, is your good health, and you don't think that much (snap of finger) about it. Why? Because the American people are the most careless, thoughtless, lackadaisical people on the face of the earth. I will prove it. Why were 102,500 people killed in America in 1941, our yearly toll caused by carelessness and thoughtlessness? 40,000 killed on our highways because of careless, thoughtless driving of automobiles? Will never forget a group of new employees I had last November; will regret forever that I did not have the power of eloquence, persuasion to convince them they should acquire safety consciousness. Four weeks later one of the group was buried in Columbus Grove. On third Wednesday after boy's employment, had occasion to pass through Cairo, Ohio, where I witnessed the most ghastly sight I had ever seen. There was my boy and four other young occupants of his car, less than 20 years of age, strewn on the ground, maimed,

lacerated, bleeding. Boy had death gargle in his throat—you would have thought he was 60 years old. On other side a Lima physician, Dr. CaJacobs, was being extricated from his car. Both drivers died three hours later and another the following day. Why? Because one of the drivers made a mistake, and that's just what an accident is, a mistake. Two drivers tried to put two cars in the same place at the same time. They could not do it. Neither can you. My lifelong regret, and I will regret it of you under like conditions, is that I did not convince the boy he should acquire safety consciousness,—to think of safety when he approached a traffic light, where hundreds had been killed—kept his car under control in fear some other driver would not. I wonder how his mother felt that night as she burned the midnight oil waiting for son to return, the son who never returned. I ask what kind of a day she enjoyed last Christmas, all because someone made a mistake.

Recently a worker presented a Group Insurance Policy Claim, which insurance I advise you to take, as I know many instances where employees received medical and hospitalization benefits whose hospital admittance might have been embarrassing were it not for the group insurance plan. Claim read, "Patient has a fractured vertebra, pneumonia has developed, condition critical." Asked him to tell me about accident. "God only knows," he replied and tears filled his eyes. Why did that man cry to me? Because the injured boy had married his daughter, sadness and sorrow had come to them. Asked him to tell me what little they knew about accident. "All we know," he said, "is the boy left his work at plant and before he got to his home he hit a cement bridge." Folks, don't you think it's about time we quit hitting cement bridges, when every able bodied man and woman is needed on the production line? I do. Don't you hit any cement bridges during the duration. Stop hitting bridges and we will not be killing 40,000 people on the highways each year.

32,000 people killed in our American homes. Why? Have I a married man in this group who warned his wife last Monday morning of the dangers of the wash day? No, not one; but you do so next Monday and we will help decrease the needless injuries and fatalities in our American homes. Last August as Dr. Talbott was preparing to examine new employees, telephone rang and Dr. Talbott left. Why? Because he had to rush to hospital to see if he could save the life of a poor innocent baby who fell into a tub of boiling water because the parents permitted tub to remain on floor rather than on chairs or a bench. The father works with us. I wonder if there was any safety consciousness in their home?

A year ago a foreman spoke of his mother's critical illness. In fact she had not recovered from loss of her daughter. "Ray," he said, "I had the swellest sister a brother ever had." What a loving tribute. Sister married worker at Lima Locomotive Works and was buying a home in Shawnee Township. One morning in June, with the birds singing, the sun shining in all its splendor, the world seemingly at peace and happiness, the husband went to work, she to basement to do her washing. When he returned that evening he found his wife dead on basement floor. She was standing in water and had contacted a "hot" wire. Is it any wonder this mother died of a broken heart for a daughter without attention on that fatal day?

Have you dark stairways, broken steps and handrails, other unsafe conditions in your home? I fear you have. Correct them for those you love and need.

Now we are coming to industry, through which doors many of you will pass tomorrow for the first time. 18,000 killed in American industry, and that is 18,000 too many. Industry deplores it. Today, over this vast industrial land, safety engineers are striving to prepare new employees how to work safely, thereby keeping free from injuries and accidents. Still, accidents are reaching higher levels. Why? I will tell you. Industry needs your cooperation, your resolve and determination to master the common hazards of your jobs, also the hazards of the homes and highways. We are not selfish, as you are worth as much to your country an hour after you arrive at home as you are an hour before returning to work. Work with us—tell us how to improve our working conditions. Show us a hazard where you will injure end of a fingernail and we will spend a thousand dollars to correct the hazard. Though there are four times as many killed in homes and on highways as are killed in industry, it is said industry is the juggernaut that maims, destroys and kills men. We do kill workers. Seven years ago I had occasion to visit home of a fellow-worker who was killed an hour previous. Yes, there were the five orphaned children clinging to the mother's apron strings. The mother, heart full of sor-

row, disheveled hair, staring eyes, lips that could not speak but wanted to say, "Ray O'Connell, you just killed my husband." Yes, we killed her husband, but, folks, I want to tell you the real cause of his death. A fellow-worker made a mistake. Don't you ever be the cause of maiming or killing a fellow-worker.

Last year I listened to several excellent speakers, ministers whose subjects were "Man," you and I. Heard Dr. Ralph Lee, Presbyterian Minister, who is also employed by General Motors Corporation, Detroit. Why should such an outstanding company employ a minister to serve their needs? Because of a better employer-employee relationship—because he knows man. He took man and literally tore him apart, placed him back together again nad he had eight different classes of men. As he named the characteristics and classifications of these eight different groups of men I could have come out to plant and selected a man for every group. Will not tell this splendid audience his classification of those in the latter groups. What industry needs today are men and women of the first groups, possessing those capabilities of good health, the desire, determination, will to produce the armaments of war which will regain the freedom we lost last Pearl Harbor Day and bring a speedier home return of the five to seven million boys who do not belong in the hell holes of Guadalcanal and the burning deserts of Africa. In speaking of accidents you must accept Dr. Lee's challenge. None can deny it. "95% of all accidents where men are maimed, injured, killed, they are maimed, injured, killed doing the things they know they should not do at time of injury." It is a matter of the will and mind. "Why," said he, "Should an airplane factory in California on the day following Pearl Harbor, turn out 25% more airplanes than ever produced before?" Because they possessed the will, determination, guts to do so. America needs them.

Listened to Rev. Auer, Galion, at a recent Safety Congress in Columbus. His subject was, "What Time Is It?" He spoke for an hour and thirty minutes, and at the end of each paragraph he had given us the answer to "What Time Is It?" Time for America to awaken and realize our country is at war. Also listened to Cecil Brown, C. B. S., Correspondent, whom you may hear daily over W-J-R, Detroit. As Dr. Lee knows men, so does Mr. Brown know the horrors of war. He was a Nazi prisoner in Jugoslavia. He knows the Nazi. He was on the British ship Repulse when it was sunk by a Jap submarine in the South China Sea. He knows the Japs. Could you have heard him speak of war your first awakening thought would be, "What will I do for my country today," and on retiring, "What have I done for my country today." "Isn't it shameful," said Mr. Brown, "in realizing we fought World War I to save democracy for the world, then allowed Hitler to steal it before our very eyes. We are fighting this war for our own survival and I will thank my God if I survive it. Tonight in this vast audience I see faces of hundreds upon hundreds of young boys who will not survive. They will have been murdered, killed in action so that you and I may continue to live in luxury, peace, comfort." A lady in the audience asked, "How long do you think this war will last?" To her he replied, "I just left my father, 60 years old, in Warren, Ohio, and I told him he would be in uniform in some branch of service before this war will end."

Is there one in this audience who knows our country is at war and what the word sacrifice really signifies? Yes, there's a hand raised. You have a son in service and you know what war means. Yes, folks, you have a part to play in this world war and you will know the meaning of the words war and sacrifice before we will be acclaimed the victors. Japan has had twenty years of preparation, Hitler ten years. We are just beginning to produce. Our high school boys of fifteen and sixteen years of age will be the victors on the firing lines. What about the millinos of boys who preceded them in action?

Training, education, preparation is the answer. Fourteen healthy production workers are needed on the production lines to service and maintain one boy in uniform. This is the preparation we are asking of you today. Did we have preparation on that ever memorable Pearl Harbor Day? No. Our officers in command were enjoying the peace, luxury, comforts that we Americans love so well. Little that night as we listened to the radio did we realize that we lost the greater part of our Pacific Fleet, pictures of which were in the newspapers several months ago. Little that night did we realize that we lost 2800 swell American boys. Little that night did we realize that our remaining boys in Pearl Harbor under death's fire were crying with outstretched arms, "For God's sake American industry and American labor, send us something to fight with." Sad to say we are not producing. Your daily papers will prove it. Shall we permit the 7,000,000 boys who will be in service at end of 1943 to cry

out with outstretched arms, "For God's sake send us something to fight with?" I fear it will be true. Personally, I feel that it will take a voice from Heaven. or a bomb from Tokyo, or Berlin, to strike Lima to make us realize we are at war. This holds true all over America, and you know I am right.

Recently a new employee, full of bravado, said, "Hitler will never bomb us." How does he know? There were two mistakes made at Pearl Harbor. We underestimated the Japs and the Japs feared us. Had they attacked San Francisco instead of Pearl Harbor, San Francisco would have suffered the same fate. Would Hitler invade Lima? Detroit is a most vulnerable city. What would Hitler's forces do to our sweet womanhood of Lima, our wives, sweethearts, mothers? The same as they did to the women of Poland, Belgium and other unprotected countries of Europe which they conquered. Yes, use them as sluts in the breeding pens. Such are the beasts we are fighting today, and we Americans think not, because we love the life of luxury, peace, comfort. Let those five to seven million boys and Old Glory do our fighting. Why worry—it's their job.

I will prove it. I know of a worker on third shift, machining breech ring castings, which castings take the explosion of every gun or cannon. We are America's greatest producers of this war material. Maintenance crew were repairing lathe next to machine where this worker was employed. Foreman of maintenance crew noticed on second night that worker was not producing. It peeved him so he asked worker, "How come every time you take a machined casting off lathe and place it on rack on floor that you waste eight minutes before you place another casting on lathe?" Worker replied, "If I get out too many castings they will cut the piece work price and I will not have so much money on pay day." A piece work price that would never be cut, rather a premium would be paid for more production. I wonder if that worker isn't thinking of "getting" for himself and cheating those boys who are dying for us-I wonder if he doesn't belong in the latter groups of men as described by Dr. Lee.

You are to be congratulated on becoming members of our Ohio Steel Foundry family, for we feel you could work in no better plant. We are controlled and owned by our president, Mr. John Galvin, whose every thought is directed in behalf of those on the production lines. He has no desire for war profits. His one ambition is giving it back in forms of good housekeeping, good safety, high wages, best of working conditions, better foods in new cafeteria open for all employees, the very best industry can give employees, for he contends a healthy organization should produce the productivity needed to win this war and bring those boys back to their homes and industry where they rightfully belong. He is not achieving his ambition. Absenteeism of 70 to 75 employees does not spell a healthy organization. We wonder if they have feasible excuses? Know of a department where foreman has 50 men. Ask him on day after pay day, "How many men absent from work?" He will say 18 men and women. How come? "They made too much money last week and will be off until they spend it." Ladies, what do you think of a woman we discharged because she came to work in an intoxicated condition? We wonder does such American Labor know our country is at war? We hope no one in this group is seeking employment for the check he or she will receive on pay day. Rather, we hope you have a more noble ulterior motive in mind,—working to restore the freedom lost on Pearl Harbor Day. Give it back to our children and those still unborn. This is your task, do not disappoint us. When you lay off or sign an accident paper you are working for Hitler and Hirohito.

We ask three things of all new employees, and if you will only cooperate in abiding by them we would not kill 102,500 people in America each year. Our first request is to bring to work the thing God gave us and not the best in the field; the mind—the thinker. Bring it to work and keep it working for the eight hours you are on the job. Keep it functioning. Do not let it become dormant. Never permit to to go back home or on some event or object outside the fence. When the mind leaves the body we are ripe for an accident. Will prove it. Twenty years ago I worked for the American Steel Foundry, at which time we never suffered injuries as we are experiencing today. We had personal contact then. We knew every man's abilities, strong points and weaknesses. Industry's problem child of today is too much work and too many doing it. We did have a serious accident in Indiana Harbor on a Monday morning. Why do safety men dislike Monday mornings? A few years back we suffered six major accidents on Monday mornings. Why did six men leave plant, hale and hearty, master of their jobs, on six Saturdays and return to work

the following Mondays to be taken out in an ambulance before 10 a. m.? Why did their job lick them on that day? Because in coming to work they were mentally and physically fatigued; something had destroyed their good health over week-end. Here is a sacrifice we can easily make—cut out the "sip" that gives us false courage and renders us unfit to master our job on Monday mornings.

Getting back to serious accident in Indiana Harbor, we had a steam-hammer man, Andy, an artist in his work. He had straightened thousands of center plates. This Monday morning he placed plate in poor position under hammer, plate flew out striking him in abdomen. Everything in stomach oozed out. Placed him in ambulance, knowing his work had ended at hammer. Upper management, being very much perturbed, asked "How and why was he injured?" Two tough questions to answer—how and why? If you are ever unfortunate to meet with an injury, ask yourself these questions. 95 out of 100 times you must blame yourself. For an hour and a half our best mechanics inspected working operations of hammer, but discovered no cause for accident. Safety Engineer, whom everyone despised as the meanest, nastiest, most inhuman,—yes they even called him the vilest names spoken by man, spoke up—"Fellows, 85% of all accidents are caused by human failure." He was right. Hospital telephoned that night advising Andy could be seen. Never will I forget the scene as we tip-toed to his bed. He was conscious enough to distinguish us. With tears trickling down his cheeks he gave us an inkling of his injury when he said, "My boy was up before the police magistrate at 10 a. m." Yes, Andy's body was at the steam-hammer, but his mind was in the police court. He died the following day because man cannot master the hazards of his work when mind is elsewhere.

If you require further proof, let's go out to the State Institution on Northwest Street,—a place for people who lose their mind. In all sincerity, from knowledge and experience, I must tell you when man or woman cannot master the common hazards of the home, the highway, and industry he is not affording any more protection to his body than those people are behind iron bars. It pays to think.

Our second request, consider the body God gave us to protect and keep forever. Do not maim or destroy it. Could you have access to all the money in First National Bank, lose the end of a finger, where can you purchase a replacement? It's not for sale. Have I one present who has placed valuation on an eye, finger, leg, arm, hand? Do so today. Place a "price tag" on every part of the body. Do you know who has a price tag on every organ and member of your body? The Workmen's Compensation Laws of Ohio. Woe to you the day they name the price for loss of any part of your body. I recall two permanent partial disability claims—loss of eye in Springfield, loss of leg in Lima. When I read the price tag on eye, 125 weeks at two-thirds of average weekly wage rate, amounting to $1,260.00, I thought claimant would go through the roof. Told me I was crazy. He wanted $10,000.00 and knew a person who would get it for him. "George, I know the attorney you have in mind. He has the same compensation book I show you. He will lead you to believe he will get you a larger amount, but in the end he will have $350.00 of your $1,260.00." And so it was. George returned to work dissatisfied. He became what we call "an industrial bum," because of an accident. He purchased a saloon first, his wife deserted him second, he lost the saloon, then he approached me one day saying, "Ray, I would rather have my eye than all the money in the world." He was absolutely right. So will you if you lose an eye. Price of an eye today is $2,625.00. Should you tell me your value would be ten times that amount, $26,250.00, I say you are cheap with yourself.

For the Lima worker who lost his leg, his compensation was $2,650.00. He also said I was crazy. Even Dr. Talbott, whom he admired and respected because he saved his life, would not permit such an award. He felt I was empowered to name any price. Would that I could. Being unable to make a settlement, finally arranged a meeting with claimant and wife in Dr. Talbott's office. After two and a half hours he agreed to accept $2,650.00. Twice during that period claimant cried. Why shouldn't he? The father of five little children, with loss of leg? His final burst of tears came with this outburst—"My God, if you give me $50,000.00 for that leg (hitting stump of leg with fist) you would not be giving me enough. That was my leg, not a leg in Columbus." He was right. Think of the words "price tags," keep them ever in mind.

Third request is a thought carried over radio the night after Pearl Harbor: "It's time the American pepole show some 'guts,' get in there and do their

job." That's just what we ask of every new employee. Put a little "guts" in your dinner pail so you will have the strength, courage, fortitude to master the common hazards of your job. Go home each night tired but healthy. Do it folks. We are the greatest people in the world and you are the greatest person in this world if you could only think it. You may think of other things more beautiful in life, more powerful—of greater magnitude; but you are greater because you can do the greatest thing that can be done in life—create a life, conceive a baby. I say the second greatest in life is to save the baby's life and limb, whether it be a year old, six years or sixty years. That's my job. Don't forget it's your job also, especially during the duration.

We have about 30 minutes left, but you can be excused if you will answer a question I have asked of approximately 1,800 new employees. Here's your question: Name something in your life greater than the heart which beats within your breast? I knew you would be silent—I expected it. That's what we need in America today. If every man, woman and child would only put their heart in their work, every deed and act in our homes, on our highways and in industry, no peoples in God's world could ever defeat us.

Now for explanation of company policies and safety rules founded on years of knowledge and experience. Frequently we meet with employees who have only weeks of experience and they like to tell us what to do. You work with us; everything we tell you is for the good of your own personal being, your home, your country, and for Victory's Sake.

First rule pertains to the eyes, which represent 87% of what you are today. Save your eyes by wearing safety goggles. Wherever there is a hazard to your eyes, where other workers wear goggles, you also must wear goggles. No worker has privilege of entering Cleaning Department without wearing goggles. Do not think of it as a Hell or inferno. It is a department where men use chipping hammers and grinding wheels, a particle of which can enter your eye, cause an ulcer, with possible loss of eye. Do you know 20,000 workers lose an eye each year? Why? Because they were careless and thoughtless in eye protection. Let me picture a scene enacted in 20,000 American homes each year because fathers were careless workers and lost their eyes. They call their wives and children together and say, "This is the saddest day of our life—the day I lost my eye. All the pleasures, happiness, joys that we have had in our home and those we anticipated in behalf of the children are flying out the window and there is something coming through the door to take their place—sadness, sorrow, grief, because the day I lost my eye I destroyed my good health and greater still, I put a mortgage on my power to earn money the rest of my life."

Thirty-two weeks ago last Saturday, Pete Uremovich, roll shop chipper, came into hospital at 7:07 a. m. He started work at 7 a. m., by wearing his goggles. Seven minutes later he reported to hospital with broken goggle lens which he displayed as having saved his eye. Here is the goggle with broken lens which saved his eye. The steel chip which broke lens could have destroyed an eye, yours as well as Pete's. I said this happened 32 weeks ago. Every day since I demonstrate this goggle by striking good lens with a padlock eight or ten resounding blows. Lens is still intact (demonstration made.) Would any of you permit me to strike your naked eye in such a manner? No, because your vision would be destroyed. Yet we have new employees who like to cheat on wearing goggles. Shortly before last Christmas I found a new employee grinding old file on a stand grinder. Called him to me. "Young man, you are married and have children." "Yes," he replied. "Tonight you are going home with the biggest check (pay day) you ever received and I'll bet you and your wife will discuss what you shall buy your children for Christmas, make it the happiest Christmas of their young lives. I'll even bet you are one who would spend your last nickel to give something to those you love." "Yes," he said. I thought he was going to embrace me. "Still," I told him, "When you grind as you were grinding, without your goggles, you are inviting an injury which could destroy your purchasing power for such a Christmas." Listen to his reply: "Hell, I have had so many injuries and accidents already in life if I lose an eye it won't make any difference to me." A swell father with children. Industry has plenty of such new workers. I wonder, does he belong in the latter group of men as described by Dr. Lee?

Safety Rule No. 2. Tell me part of body injured most. Ladies, what part do you cut most frequently in kitchen? Index finger, certainly. Workers permit objects to fall on their fingers, hands and eventually the feet. Will take you back to New Year—1932, to prove Mr. Galvin's wisdom, knowledge and why he is capable of telling us how to work. In studying the accident experi-

ences of Lima and Springfield plants he noticed in Springfield report that in one department, ten departments at that time—Molding Department. Thirteen molders in 1931 had permitted and allowed objects to fall on their feet. Each molder was off approximately 12 weeks. "13x12" says Mr. Galvin, "Equals 156 weeks, 156 paychecks which did not go into homes of 13 workers during the depressive year of 1931." Anyone here worked for a living in 1931? You did? Tell me the amount of your paycheck. "Very little?" Yes you are right. Then Mr. Galvin advised supervision of his decision. "We cannot work for the worker, he must work for himself. We cannot think for the worker, he must think for himself. Since it is difficult for some to work and think to protect themselves and families we must think for them. Hereafter, every employee must wear safety shoes. If employees fail to cooperate and suffer a foot injury because of failure to wear safety shoes, he automatically "kisses" his job goodbye." Naturally some workers objected. They wanted to wear tennis shoes, bedroom slippers, worn out dress shoes, anything but the proper footwear, especially in a foundry. However, wherever you find men you find good men predominate. They cooperated and told other workers of saving foot injuries by wearing safety shoes. Two things have given our company the greatest safety record in the State of Ohio: Cooperation on the part of employees in wearing safety shoes and compulsion on part of management in making workers wear them, fear of dismissal if injured, have given our company this great safety record. We have not suffered a disabling toe injury because workers did not wear safety shoes since March 15, 1935; over eight years in comparison to 13 men in one department in 1931. Don't you think we know what is best for you? Cooperate with us, you will be the better for it. Every worker needs a good bed, a good pair of shoes. He spends 24 hours a day in them.

We have Safety Meetings once a month, noon and midnight. Why at midnight? We think as much of our men on the graveyard shifts as we do of those on days. Their efforts are equally vital for Victory. We give $160.00 in War Bonds and War Stamps at meetings. If every worker in your zone works safely without accidents and your clock number is drawn you are eligible for an award. If some worker in your zone suffers an accident during the month and your number is drawn, you are denied the award. A $50.00 War Bond is also given each Monday if worker works full time during the previous week. If worker lays off work and number is drawn he does not receive the Bond. Winners of following Monday's award will receive $100.00 Bond. "YOU cannot spell Victory with an ABSENT—T."

A year ago Mr. H. P. Heyne, one of the best safety speakers in Ohio, conducted Safety Meetings. While here he asked, "How do you get your men to wear safety shoes—some companies have this difficulty?" Reaching in desk drawer I removed a safety shoe. "Here is the answer, Mr. Heyne: This shoe was worn by Leo Rice, chainman. If any workers must know safety they are our cranemen and chainmen. They must work in unison, in harmony—the same as an orchestra. If they err in signals, something happens. Signals were crossed this day—a mistake was made. Large Lima Locomotive crosshead fell on Leo's foot. Discovery was made in hospital that foot did not show a scratch, a drop of blood. Leo was given a new pair of shoes and this shoe is used to demonstrate to new workers why they must wear safety shoes." Shoe was placed on desk and conversation with Mr. Heyne continued. Fifteen minutes later Leo came into hospital. I called him over, asking, "Do you see anything here that belonged to you." "Yes," he replied, "That safety shoe belonged to me. Hadn't been for that shoe I would have been off for 12 weeks." "Leo, could your wife and two babies have suffered to have you away from work for 12 weeks?" He replied, "My wife and two babies demand that I can't be off even for 12 minutes." Perhaps your wife and babies demand this of you. This is our story of safety shoes. Cooperate by wearing them.

Safety Rule No. 3. Reporting of injuries to your foreman and hospital. Let me clarify this point; if you do not understand, interrupt. I will gladly repeat. Whenever you suffer an injury do not think it trivial or unimportant. You may not be as tough as you think you are. We have no employee who can consider himself or his work so important that he cannot take time off for medical care. You know the story of life: Man cut finger, no medical care, infection, amputation, gangrene, amputation hand and arm. We must have discipline, demand workers receive medical care for every injury. We take your clock number, name, part injured, for your future protection. Since home and highway injuries are four times greater than industrial injuries, do not report an injury six weeks later. We may have reason not to believe you. We have

cheaters, we have jails because of them. Have in mind a worker employed for six weeks. He wanted to be fired so he could enter suit against us for a hernia. His claim and affidavits did not possess merit. Fellow-worker swore he was with claimant at time of injury so claimant would receive financial benefits. Claimant lost suits because investigation revealed his hernia was suffered in another plant, nine years previous. How did he pass physical examination? Gave card he was to take to doctor's office to his brother, free from hernia, who was accepted in name of claimant. This class of men forces us to be careful.

Speaking of jails, was playing baseball in Elmira, N. Y., where boys' reformatory is located. Told friend I would like to see reformatory, how the boys lived. He said if you want to see a sight be at railroad station at 6:30 a. m., where you will see 12 or 13 coaches of bad boys from New York and Brooklyn. I didn't see anything in those boys' faces that I do not see in yours. There was nothing unkind, beastly, inhuman—no, I only saw lack of training and education—home environment. To me there is no such thing as a bad boy. Training and education is the answer, and how we need it in industry today.

Proper lifting of objects is most important. "Is there a C.C.C. boy present?" If so, he will tell you how to lift properly. Recall a group of 25 men, one colored C.C.C. boy of 19. Asked him C.C.C. instructions on how to lift object properly; like a major he said, "In lifting objects they told us to use our legs, not our back." How proud I was of him—group arose in chairs in awe and admiration at colored boy 19, who told them something they did not know at 60. Use your legs in lifting, not your back. There is no such thing as a strong back. Ask your family physician, he will tell you likewise. Hope all have seen a baseball game; have met several who have not. Who is the brains on the team? The catcher—his movements will show you proper lifting position. Watch my back as I crouch like a catcher. Back remains straight, the legs bend. As catcher signals pitcher in a squatted position, then you pick up object while in same position. Never lift object in front of you or sidewise. It is, then those weak stomach muscles fail, the potential hernia becomes evident. Two bones between knee and hip will not fail you—they possess strength to lift. Use your head. When brain telegraphs to hands—do not lift it, leave lift alone. Good common sense will prevent most back injuries.

Know your job! What is of greater importance to you? Three steps are necessary in the training of new workers. Telling, showing, testing, supervising, intelligently. Be kind to yourself. When instructor asks, "Do you feel qualified to proceed with your work?" never tell him yes because you are proud, when he might think you are ignorant if you say no. Tell him "No" if you do not understand; you will receive further training. Our problem—too many men allow instructions to go in one ear and out the other, resulting in too many mistakes. You are not permitted to operate machinery unless you know its working operations. Keep safe distance from heavy crane lifts, especially if you are standing near an immovable object. Load may be off-center, if chains fail you will have no retreat and may suffer serious injuries. Yeserday saw four women sweepers, three stepped out of danger as crane was approaching with a very dangerous lift, the other stood watching lift pass over her head, thereby inviting injury. Asked her if she was following instructions. She replied, "I guess I wasn't thinking." These are the first five words spoken by injured workers. Ladies, you must protect yourselves, even more than men. We do not want any Veronica Lake style of hairdress. Wear turbans, hats—keep tresses under control. Hair entangled in machinery can deprive you of your scalp. Wear loose clothing of hard materials. We admire curves, grace, beauty, but do not wear tight fitting sweaters which display such a form. Men may become distracted, take mind off work, etc. If you have any troubles, consult your foreman who is kind, sympathetic, understanding.

We have now come to Good Housekeeping. How we love it. Mr. Galvin wants to make your working home as clean as your living home. Every employee's cooperation is needed, but we do not get it. Could I take you to certain spots, would ask you, "Did men eat dinner here today?" Pointing to food scraps on floor you would have to asknowledge it. Men did not do this because of meaness; they did it because they were thoughtless—didn't think. Who do you think was standing on the speaker's platform while National Anthem was playing before start of a Safety Meeting? Colored janitor in locker room. 800 employees present, 300 were old valued employees trained in company policies. Knew janitor and good housekeeping are synonymous, knew janitor was in trouble. 500 new employees did not, still must be trained, educated along good

housekeeping lines. Janitor said, "Fellow employees, especially new employees, I want and need your cooperation in maintaining cleanliness and better housekeeping in the locker room. There is someone taking shower baths who spits in my rubber tub containing preparation for prevention of athlete foot disease. Someone must see him. Show him to me or someone in authority." This is your responsibility. Should you work with one below par mentally or physically, help train him to be a good worker. There is an old saying, "You cannot throw perfume on others without getting a few drops on yourself." Keep yourself clean, your work bench clean. If you see a worker committing a nuisance, is unclean, tell us of him or her. Take your shower bath, leave our dirt here. Your wife has enough to do. I ask, "Would you take a shower bath then immerse your feet in a tub for prevention of foot disease when some other worker spits in it?" Don't you worry, they are absolutely clean. Worker who spit in tub is with us no more.

I say a dirty worker in plant is dirty at home. That's just where we are going now. I am going home with each one of you. To me, I am going to meet the swellest person in the world, your wife, mother, husband. Will use word "wife." I know her thoughts today—what she will ask when you reach home. Knowledge and experience in this work has given it to me. While going to your home, could I write eight or ten thoughts on paper. you conceal them and she will ask you what I wrote. Let's presume a few things for a moment. Your name is Ray; you leave work at 4:30 p. m., whether you do or not. You arrive home each day at 4:55 p. m. Could I sit in your kitchen a week from today, two weeks from today, talking with your wife, could I notice her looking at clock on wall at 4:45 p. m.? I can tell you what she is thinking. She is thinking her Ray,—you, will be home in ten minutes. This is what she thinks all day long. She sent you out in the dark hours of the morning so you can earn the dollars for the sustenance of life. She is now expecting you home at 4:45 p. m. When you enter your kitchen door, lay your dinner pail on table, you will have brought sunshine, happiness, joy into your home. Why? Because you are the wage-earner, the father, husband, master, lord of your family and home. If you haven't seen it yet, some day you will see your little child reach in your dinner pail, remove a dry piece of pie or cake, eat it in preference to fresh food on the supper table. Why? Because in your child's mind there is a thought. She is thinking that belonged to the greatest fellow in the world, my daddy. You be home every day at 4:55 p. m. They want you; they need you. You are working for a company that also wants you to be home at 4:55 p. m. We will lend every endeavor, spend every effort to see you do get home at 4:55 p. m. We need your cooperation to do so. We have seen days when this cooperation was not given, when a worker did not arrive home at 4:55 p. m.—the day he left here in an ambulance because he did not possess the will, determination, guts to master his job.

Why do I speak in such terms? In behalf of the American Flag, about which we might not know all we think we know. Eight days after Pearl Harbor we celebrated the 150th anniversary of one of the greatest events in history. What was it? The 150th anniversary of the Bill of Rights. What's the Bill of Rights? How many millions of us do not know? The Bill which gave us freedom of religion, press, assembly, trial by jury,—those countless blessings of freedom we possess but are not enjoyed in foreign countries. If that flag of ours could speak, this is what it would say, "I do not blame anyone for not knowing when the 150th anniversary of the Bill or Rights was celebrated nor of what the Bill of Rights consists, because I gave those rights to you as freely as the air you breathe. But today I have been sunk in foreign waters. I have became desmirched with the blood of American boys. Today I am begging, imploring, beseeching you to show your appreciation for all that I have given you. Help me to bring back the freedom we lost last Pearl Harbor Day, so that I can protect your children, the unborn children, for a greater day."

I wonder how many of us try to envision the sorrows, sacrifices, sufferings of the peoples conquered by Hitler. How do we express ourselves when reading the people of Greece are actually dropping dead on the streets from starvation for want of food. Eggs selling for $3.00 apiece. I wonder. Let's go over to France and visit with the Frenchman who four and five years ago enjoyed his freedom the same as you and I. Ask him what he thinks when he humbly steps into the gutter to allow a swaggering German soldier to pass him by? That's where he steps, in the gutter; literally that's where he sleeps, lives, eats—in the gutter. Ask him what he thinks when he works 60 to 70 hours a

week for no pay? That's what Hitler pays him. Ask him what he thinks when he sees the trade labor union rights for which he sold France taken away from him by Hitler? Ask him what he thinks when he sees his wife slowly starving to death and his children being raised in slavery and serfdom? He will tell us what he thinks. He will tell us to go back home and tell every American Citizen not to make the mistake we made in France. "We worked too little, we worked too late." Some day we will be the victors. Some day our flag will fly higher than all the nations' flags of the world. When that great Peace Day comes there will be a parade in every city, hamlet, town. A parade will form in your square in Lima. Do you know our ambition ,our hope? We hope that every Ohio Steel Foundry employee will so conduct himself and herself during the duration, keep his good health, free from injuries and accident, will work every day demanded of him, so when the parade is forming you will conscientiously feel at heart that you were a part of the "boys" who died for us; a part of every parachute, gun, cannon, destroyer, cruiser, tank. You can then throw out your chest, get in the parade. You will be a part of it. We hope, also, that we do not have one single employee on that day who will have a guilty conscience, who knowingly worked only for himself, his greed, and not his country. He was a cheater and will hide behind the bush or barn, just where be belongs.

In conclusion I wish to leave two words with you. I want you to take them unto you, embrace them, love them if humanly possible. Place these two words in such a position that you will always see them. They will serve as beacon lights illuminating your future pathways. These two words are Safety and Good Health. You recall Mr. Heyne, whom I mentioned in story of safety shoes. He told me of an incident in Cleveland. He knew the parents of these three children. Would such a catastrophe ever occur in your home you would not have a pleasurable moment as long as you live. I tell it to the women because I respect them as ladies. This Cleveland woman took her three children—a little girl, so tall; a little boy, so tall, and a babe in her arms, to the bathroom. She bathed the little girl and boy and sat them on a stool to trim their toe nails. Then she wiped them dry. Like all good healthy American children, they started to run upstairs in the nude, naked. Why shouldn't they, in their own sweet innocence? It wasn't long before the little girl, full of happiness, ecstacy, joy, had her outburst of laughter. Her fun had ceased and she went in search of something which would afford her more laughter. Unfortunately she ran into the bathroom, where her eyes fell upon the pair of scissors used by her mother to trim their nails. She did not know the dangers of that sharp instrument but she did know it was something she could cut with. Unfortunately she picked up the scissors, mother still bathing the baby, and as the little girl was walking out of the bathroom, who confronted her but her little baby brother. The only thing she could see on her little brother that she could cut off was the little thing that made him a boy. The little brother screamed in agony and suffering. Mother left the baby in the tub, rushed to him as she saw her son, her own living flesh and blood, bleeding and hemorrahging, she cried out in supplication and want to her God in such a pitch of voice that her neighbors heard her within their homes. They met her as she reached the doorsteps. Unfortunately one of her neighbors was a man like the 102,500 Americans I have been discussing for the last hour. Though he had every good intent, purpose to serve her in her sorrow, affliction, he lost his head. He rushed to the garage, put key in ignition, put car into reverse and raced out onto the driveway. He failed to look out side window, rear vision would not permit, to see if anyone was on driveway. The little girl was there and he broke her back. Now, mother had two crippled children to take to hospital. As the shades of evening were falling that night this mother left her two lifeless forms in the hospital. The Angel of Death had stolen them from her. It is any wonder when she reached her home her heart was full of sorrow as she gazed upon the little high chairs, knives and forks, cups and saucers that would be used no more? Then she asked, "Has anyone cared for my baby in the bathtub?" She rushed to the bathroom to find her little baby had drowned.

If any of you know of two words that mean more to your own personal being—to your homes—your country, and for Victory's sake than Safety and Good Health, it will be a pleasure to talk with you. Thanks for being such an attentive audience.

Chairman Rentschler: Thank you, Mr. O'Connell, that's quite a new approach I think you gave us for the induction of new employees into our own plants.

I think that we can all profit from the outline that Mr. O'Connell has given us and I'm sure that there will be many points that we can all uuse in our plants.

We will now open the meeting to discussion.

Mr. Edward Grossheim (Cincinnati Milling Machine Co., Cincinnati, Ohio): I am glad that you have gotten so far along that you have got all your men wearing safety toe shoes and I'm awfully glad that number 17 coupon came out because it looks as though we are going to get more men to wearing them because they can't get anything else. But what I would like Mr. O'Connell to tell me, how did they put it over? For example, did they by example get men to wear safety shoes just because, for example, the foremen all wore them and the supervisors wore them? I wonder if they started out that way or whether they just won them over by the foreman saying, "You ought to wear safety shoes but I don't need them?" Now, that's the point I'm bringing out here.

Mr. O'Connell: Well, that could be answered by citing an instance. We had a shoe salesman from St. Louis come in one day and I went down to the plant and I said to our cold nickel boss, "I would like to have your men go out there and order safety shoes from this salesman." There were forty-four men working that day and forty-four men bought shoes, so you see we had the cooperation of supervision also.

Mr. Grossheim: I might mention these safety toe shoes for the benefit of all the men here. I am no molder but we have a foundry so I want to take back their story in the future. I am no molder, I have not worked in the shop for the last eighteen years, but I happen to be the safety supervisor of that organization, and two years ago if I had not had on safety toe shoes I would have lost all the toes on my left foot, maybe, because a pile of iron castings that I was standing in front of fell on my foot. If I would have been smart and done as Mr. O'Connell said, I would not have stood in front of that pile. Fortunately, I had on safety toe shoes.

Another thing about accident prevention, we hear a lot about the accident, of course, we all know them, we all know all about the accidents, sometimes we scribble up an awful lot of paper and what we can do about it. We have had the accident now and our record looks like that. I wonder how many of us ever stop to think that there is only a very small percentage of the men in any organization that get hurt, a very small percentage. We try to find out and our medical department of course could give us those figures but it takes a long time to get the medical department to give them to us, so some time ago we made a survey and we started out first of all in the department to keep tab of all the injuries in the shop, five departments, minors, majors and everything else, and we found that in the first three months of this year the total for the whole shop of those who were injured was 40%, so there we found that we had 40% of the men who were continually being injured in the three months time. We had one man that had been in the medical department twelve times by those figures, and we found other departments where the average was only 27%.

Now, don't get me wrong, fellows, and ladies too, don't get me wrong. I don't mean to say when you get a hold of these repeaters as we call them—they are the ones that are pulling down your record—when you get a hold of these repeaters you don't want to go out there with a bat and say, "Now, listen, buddy, if you don't cut it out I'm going to sock you with this." That would be the wrong idea because then they would be liable to keep away from the medical department, but it does give the foreman or the supervisor—that's what we hope to accomplish by this—it does give him a line on what men he must talk to and see what they are doing and how they are doing it.

Now, I hope you might take that back home with you, too. Maybe you can get some good out of that because, after all you know, we are all inclined to condemn a whole department when only a small percentage of the men in the department are rolling up all the accidents.

Mr. Domino: May I just give a little information in regard to your safety shoe? Number 17 coupon has been mentioned. I'm with the West Steel Casting Company; we went to the OPA on this thing and we got all the safety shoes we need through the OPA and don't have to use the number 17 coupon. That may be of help to some of you.

Mr. Fred Wilhelm (Bornot Company, Canton, Ohio): I would like to ask Mr. O'Connell about safety glasses. I come from a small plant where we haven't

found it as yet necessary to enforce safety glasses as a matter of company policy. Our policy so far has been a matter of suggestion, but one thing that we have trouble with is the fellow who wears glasses, who always seems to come back with the fact that he can't see as good with safety glasses on, and we have tried several different types. Now, I wonder if anyone had a suggestion on how we can handle those fellows? Will we have to resort to controversy or just what can we tell those fellows to get them to wear those goggles?

Mr. O'Connell: Well, I tried to bring that out in that statement where I told the man to think of his home and children as well as himself, but of course it takes training and education, and I think youu can make them do it by constant training and education and occasionally making an example out of one of them and so on.

Mr. R. W. Pendleton (Grinnell Company): We have a foundry here in Ohio that I'm calling on during my visit to Columbus to attend this Congress. I guess I have attended this Congress for the last seventeen years and I haven't heard anything that has been more helpful than what we have heard this morning. I think Mr. O'Connell's talk was very practical and worth-while.

I would like to make a comment on this gentleman's remarks on the number of injuries that are being reported. I think that is very helpful and if you have in your plants proper coordination you can find out those things. I think there is a point beyond which we should not discourage the men from going to the first air room. I believe you will agree that there are men in the shop that are on jobs that are monotonous, perhaps you have a good looking nurse and perhaps they would like to vary the monotony and go and have a talk with the nurse on any pretense whatever. There are undoubtedly many repeaters there as this gentleman has brought out.

Now on the matter of safety shoes, that is one of the things that has been bothering us, that number 17 coupon, and I understand that our states are not uniform in the application of ways of getting safety shoes for our employees. I hope that is going to be worked out as apparently it has been here in Ohio, you don't need the number 17 coupon, if the man needs safety shoes for his work he can get them without sacrificing one of his precious 17 coupons.

Now on the matter of goggles, I have found through the years that it is possible of course, as most of you know, to obtain special prescription lenses for the men who wear glasses that have the safety feature incorporated in the lens. That's number one.

Number two, they have an all-over safety goggle that goes over glasses. It is probably a little more expensive but it can be adjusted to suit the man's face and features and be comfortable. If you consult your goggle manufacturer there are many of them reliable who can tell you how to overcome the objections such as fogging and discomfort and what have you.

Now, that I think is an easy thing to overcome. Mr. O'Connell I believe has the correct approach. It's got to be sold right at the source, you've got to believe in it yourself and having that start I believe the rest is simple.

Mr. Eversbach (United Motor Service, Inc., Lima, Ohio): I just am wondering whether you provide prescription goggles.

Mr. O'Connell: Yes, we do.

Mr. Eversbach: I thought that was the question that the gentleman before the last gentleman tried to bring out, the fact that they had difficulty in using them, if they were just using the protective goggle, that is, the plain goggle over glasses, or if they had to take off their glasses, which would interfere with their eyes. I'm trying to find out more information on the prescription goggle, just to what extent prescription goggles are provided, whether you provide them.

Mr. O'Connell: We provide them free of charge. And also regarding the number 17 stamp, if you work with your rationing board I don't think you will have any trouble.

Now, it is not necessary for any of our employees to use the number 17 stamp, they can use that to purchase a pair of dress shoes if they want to. We have a blanket form that gives the number of their ration book and we don't have any trouble at all when they want to buy safety shoes. It has been ironed out through Washington and our own rationing board in Lima and I am sure that you people can do the same thing, so 17 stamp doesn't worry us at all.

Mr. Harold Segraves (American Radiator & Standard Sanitary Corp., Elyria, Ohio): I might add that the past two weeks we set up our system with the

OPA rationing board on safety shoes. We incorporated the safety shoe program in 1938. It takes a lot of education, pictures and loss pictures and posters and constant talking and we haven't had a complaint on safety shoes in our plant.

I might give just a brief idea how we started our program. We started a poster sheet showing each department, what percentage that was covered and one of our departments in the steel production department was in first place, and up in first place with 100% coverage. Well, it was battle, or rather a race from there on out what department was going to be the next one to complete 100% safety shoe coverage.

Through a period of about five or six months, which covered five or six hundred employees, we finally reached the point where we had 100% protection coverage. The shoe men call at the plant and give us a lot of tips. Some of you fellows call on your shoe manufacturer, he will help set up a program for you.

In the past two weeks we have had a meeting at the rationing board whereby we have established a shoe bank, we call it, in connection with the local bank, and we issue our own stamp now to the employees. We have two employees in the shop, we have a program and personnel manager who have the authority and have been sworn in by the rationing board manager to issue the stamps themselves, and that can be worked out in any plant in any town in the State of Ohio.

I don't know what any other state does, but if you contact your rationing board I am sure they will agree to a plan you can work out whereby you can issue your own stamp to your employees.

Mr. A. H. Lind: Do you think that in the future there is anything that the Safety Council is going to do in conjunction with the foundries whereby these goggles and these leggings and these safety shoes will be a must rather than a suggestion?

Mr. Horace Williams (International Molders Union, Local 307): This has been the first year that our local has ever sent a delegate to your wonderful convention in regard to safety. The members of our local have begun to appreciate what these safety devices have meant to employment. We haven't had any safety shoe program. I spent an hour and a half yesterday with one of the display managers at this convention and he explained the situation in regard to that safety shoe, and he agreed to comply with my wishes and make a visit to the company that I am connected with, and I know that the men will fall in line with regard to safety shoes. It's something that we haven't worn there and we are making large castings and safety under those conditions is bad, and the members of our international sent me here to get all the ins and outs pertaining to safety.

I recall a number of our members are wearing oxfords and shoes that would be discarded and left around the house and tennis shoe and things of that sort, but I'm going back to the international and the members and explain to them the working conditions will be remedied a whole lot and if there is any advice you would like to give me, Mr. O'Connell, or anybody else, I would be glad to accept it and take it back to the members of our international.

Chairman Rentschler: Well, I think you will find, as you are finding out here today, that that is pretty much a matter of education and that it needs to be explained to the individual the hazards under which he is working when he isn't properly protected.

Answering this gentleman who brought up the matter of whether the safety glasses and safety toe shoes are a must, I think there are state laws relative to employment in the foundry industry and relative to certain safety protective devices that must be furnished by the company and the responsibility of the employees in using them.

We have a letter that we send out to our employees usually once a year that contains the sections of the law, showing the operations of the company as to safety devices and also the operation of the individual working in the foundry industry for the protection of himself and of others that are working with him, so that's just a matter of giving the men information.

Now, it might be that you would be interested somewhat in our experience with safety shoes. We started I think back in 1936 or '37 on an educational basis of trying to sell the foremen on the idea of safety shoes. I would say half a dozen out of the twenty-four or twenty-five who were at the first meeting with the shoe salesman who showed pictures and had all styles of safety shoes, if you wanted a dressy shoe or if you wanted just an ordinary work shoe,

you make your selection from what he had, but we didn't get along so fast, it was a matter of constant repetition of the safety feature of safety shoes. After we got our foreman sold we gave our employees an opportunity to become interested by conversation, by safety talks, by posters about the subject, and when we had some toe injuries we took up the old shoe that had been worn to show that a protective shoe might have prevented the injury.

We made up some display boards and then in 1938 we had a display of safety shoes, different styles, we had a safety shoe section to show the protective toe, we had some shoes that had been worn by men that had been injured, we had some photographs of injured feet that showed how badly the toes had been crushed. We also had literature available, and finally we made a particular effort to stress to the women the safety feature of these shoes and within a month after our open house we had 50% of our employees who purchased safety shoes, and then we followed this thing along, explaining it to each new employee that came along, until we had about ninety-seven or ninety-eight percent of the employees wearing safety shoes, and we feel that the others will come along.

Now, it is a condition of employment, each applicant is told that if he comes to work he will be required to wear safety shoes. We have no difficulty whatsoever. We don't have any difficulty with the men on the job.

Every time there is an accident if the shoe toe is badly scuffed or cut from an injury we usually give the man a new shoe and take in his old shoe and hang it up on our display board. Sometimes we try to stage the accident. For instance, in the case of a cutter running over the operator's toe, we stage the same through photographs of that, put it with the shoe as a constant reminder of what might have happened, so I think it is a matter of education and I think Mr. Williams has been here, he has seen safety shoes, he's got a foundry and it's a matter of everybody realizing, as Mr. O'Connell said, that there's a price tag on every part of the body. If you don't realize it from any other viewpoint there is a price tag on every part of the body and if he has crushed toes he would not have had crushed toes if he would have had safety shoes.

The discussion of goggles was of interest to me because we have had some cases where the question has come up as to prescription lenses. Mr. O'Connell says he furnishes them free. Then the question came in my mind, how long does a man have to be employed by the Ohio Steel Foundry before he will be furnished with prescription lenses and how long must he remain in the employ of the company if the goggles are to be free?

Mr. O'Connell: Well, we feel that we have an employee that we consider a friend to our organization and we buy the prescription goggle.

Chairman Rentschler: But he is there some few days?

Mr. O'Connell: Yes, we have a certainty that he is going to stay with us. It is just a matter of good judgment.

Mr. Grossheim: I might tell you what we are doing at the present time. We had a hard time getting that started in our company. That is, the men would bring goggles, bring whatever type of goggle they need, and then he gives us his prescription, gets his prescription from his optician and we forward that to the American Optical Company—by way, I'm not advertising them, we aren't getting any credit out of this—but that's where we have our work done, we forward it along to the American Optical Company and they of course grind the lenses. Now, if it's plain vision, or single vision as it's called, they cost the men $4.00, he pays that. If it's bifocals $6.50, but if the man leaves the next day they are his goggles.

Now, of course, we are taking a little bit into consideration the length of time the man has come in. If he comes in today, why we provide him with a pair of cover goggles for a while anyhow to see whether he is going to furnish us his prescription.

Chairman Rentschler: Any further questions?

Mr. Eversbach: I might say in answer to a question brought out, I happen to know one industry, a very large one in our town, I don't care to name it, in fact, I think the gentleman is here representing them, but they have an arrangement whereby if the man stays for two years they are his goggles; if he gets under two years they charge him a pro rata amount, for instance, if he is there a year they charge him half.

Chairman Rentschler: On the use of goggles in our plant, if there is a job that requires goggles the man signs a receipt for the equipment that's furnished him at a designated fee. I think we charge $1.50 in case of hook-up goggles. If they are in need of repair he brings them back, we repair them free of charge and keep them in good shape; in the event he leaves he doesn't return his goggles, it's deducted from his final pay check, but we have certain requirements on jobs where goggles must be worn and when a man is put on that job he is told at that time that goggles are a requirement and he must wear them, so it comes back, in answer to this gentleman's question, as to the individual policy of the company as to setting up certain rules and regulations for certain occupations or for certain jobs.

Mr. J. E. Kelly: It seems as though this discussion is losing the point of the glasses, prescription goggles. Now, here's what I think, a man who wears corrective glasses is an extra hazard, maybe he would hit his glasses and break the lens and maybe get a piece of glass in his eye. Now, whether he is there one day or whether he is there twenty years he is going to lose an eye and it seems to me as though it is just good economics to protect that man regardless of how long he is there.

Chairman Rentschler: Well, he is a hazard up until the time the protective lenses can be made even though you decide to do it.

Mr. Kelly: I understand that, but new or old the cost is the same if he is going to lose an eye.

Chairman Rentschler: Well, gentlemen, this has been a very good discussion. We don't want to prolong it too long unless there are some other questions.

It is customary for the chairman to appoint a nominating committee to select the officers who will run this meeting for next year, and I would like to appoint Mr. George McConahy of the American Steel Company, Mr. Jim Byrum of the American Rolling Mill Company and Mr. Carl Hall of the Elyria Foundry Company, so if those three gentlemen will select a set of officers for next year's session it would be appreciated.

I think we are fortunate indeed to have with us Dr. John Skavlem, who is the present president of the Academy of Medicine of Cincinnati, Ohio, and associated with Skavlem, Dunham and Heusinkveld in Cincinnati. He is an experienced man on the subject of silicosis and since I'm not a technical medical man I won't attempt to go into his subject, but I think he can give us a message that will be of vital interest to all of us in the foundry industry. Dr. Skavlem. (Applause).

SILICOSIS

Dr. John H. Skavlem, M. D.
Cincinnati, Ohio.

Mr. Rentschler, Members of the Foundry Session, Ladies and Gentlemen: Life itself is a hazardous occupation. In fact, life can be defined as the battle of the human body to function normally against the efforts of its environment to alter such performance. The hazards of the environment are either the invasion of the human body by other living organisms, large or small, such as parasitic worms or insects, microscopic germs, the ultra microscopic virus, or insults of physical and chemical changes so severe as to alter the structure and function of the body. Disease produced by germs is most common. The physical and chemical causes of sickness are represented by severe alterations of temperature, humidity or pressure to the body, or the irritation of noxious substances whether they be gases, fluids or solids. The portal of entry to these chemical or physical irritants may be on the skin surface or through the open avenues of the digestive and breathing apparatus of the body.

We have chosen for our discussion the hazard of the inhalation of certain harmful dusts into the body, namely, the disease silicosis. It is evident that the damage done in the body by fine particles of dust must be either physical irritation or chemical change. The portal of entry into the body for these harmful particles is the breathing apparatus. The dust taken into the body by the digestive tract through swallowing does no damage and is soon eliminated. The lungs are the battleground and bear the scars of combat. When we consider the delicate structure of the lungs we are tempted to wonder how they continue

to withstand disease so long in the face of daily onslaughts of many hazards. The lungs, no doubt, are submitted to more insults from environment than any organ of the body. The aid we breathe, varying in temperature from far below zero to much over a hundred degrees, always stocked with plenty of dust from field, street or factory, and never free from rich pollution of bacteria, needs much preparation before it is safely utilized in the lungs. Add to this the artificial hazard of great abnormal increase of dust found in certain occupations and the seriousness of the threat to health increases. Fortunately for us the lungs are well protected against invasion of foreign bodies, be they living germs or inert particles. The defenses start at the nostrils where we find stiff hairs forming a fence. Beyond them the nasal secretions catch and discharge volumes of the dust. Deeper in the throat, windpipe or trachea and bronchical tubes, the lining membrane is covered with fine hair-like processes called cilia which wave back and keep out into the mouth much more of the invading substances. Even more effective than all of these defense mechanisms are the lympatics and lymp nodes which carry a vital fluid throughout all the tissues. This fluid and its cells including the phagocyte or scavenger cells, gathers up foreign material of all sorts from the tissues and deposits it in the lymph glands which act as filters to check the dirt from getting into the blood. By these defense, when acting normally, we are spared diseases in the lungs.

As industrial hygienists we must recognize that the peril of inhaling harmful dust depends on two variable factors, the specific susceptibility of the worker to the dust inhaled and the degree of exposure.

Physicians and workers have long observed and recognized that individuals exposed to the same dust hazard present wide variance in the amount of injury suffered. After twenty years of work in a foundry ten individuals will suffer no lung injury and one fellow worker will be the victim of serious respiratory disease. Certain important factors in this difference of susceptibility can be answered and the knowledge fruitfully applied by physicians. We regret that some factors remain unknown. Among the most important factors influencing susceptibility of an individual to injury by harmful dust are age; nationality; certain anatomical peculiarities of the breathing mechanism which have just been mentioned; previous exposure to dusts; the presence of pulmonary diseases, especially tuberculosis and emphysema; the presence of certain heart conditions; general health and the individual's intelligent willingness and ability to cooperate with fellow workers in measures of prevention.

It is certain that any anatomical deformities or peculiarities in nose, throat or bronchi, which make the entrance of dust into the lungs easier, increases the individual's threat to injury. This may be due to dry mucous membranes, lack of hairs in the nostrils, lack of secretions from the mucous glands, clogged lymphatics and lymph nodes or already burdened phagocytes.

It is easy to understand by laymen, as well as physicians, that a lung previously injured by disease, be it long continued penumonia, abscess, asthma, chronic bronchial infection or tuberculosis, will be impaired in its ability to rid itself of harmful dust. Likewise, a lung whose capacity to function has been reduced by chest injury, scarring or stretched air cells (emphysema) can tolerate less injury from dust than a normal one.

Age is a factor only because years add, in a cumulative way, the insults suffered by the lungs from infections and inhalation of dust and noxious gases from all sources. Therefore, the tolerance for harmful dust decreases as age increases.

The rule of susceptibility based on nationality parallels that for pulmonary tuberculosis. Negroes, Indians and Mexicans all present an unusually high mortality from tuberculosis and for that reason offer poor resistance against injury from harmful dusts. The same rules as apply for general good health prevail for the problem of susceptibility to dust exposures. Poor economic states, crowded living conditions, poor hygienic and sanitary surroundings in home or factory, chronic delibitatory diseases, all lower resistance to tuberculosis and other lung infections and so increase the hazard. But no one factor in the problem of individual susceptibility to injury from dangerous dust is as great as the person's willingness and ability to cooperate in a sound prevention program.

The degree of injurious exposure from dangerous dusts depends on several factors. The significance of each factor is very important in combating the evil to be overcome. In the study of the dusts we must consider composition, distribution, concentration, size of particles, physical characteristics, duration of exposure.

First we can state definitely that any dusst capabale of producing permanent changes of scar or fibrosis in the lungs must contain silicon. Silicon is the recognized, condemned, offending element in the dust. Certain forms of silica are more injurious than others. Until recent years we held that only the free form of the mineral silicon could cause tissue damage. Now we know that some of the combined forms of the mineral, the silicates, are capable of this injurious action. The one silicate which has been so proven to be injurious is magnesium silicate of asbestos. A few other silicates are regarded with suspicion but remain definitely unconvicted.

The hazard is further modified by admixture of the silicon with other dusts. There is evidence to show that alkalies increase the harmful properties of silicon and speed up the damaging changes in the tissues of the human body. This may explain the so-called cases of "acute silicosis," where the time of exposure has been only a few months instead of the usual five to twenty-five years. I have recently seen four of such acute silicosis cases, verified by post-mortem examinations, where the exposure history was measured in months. All of these acute cases occurred in soap powder workers and the mixture with alkalies was evident.

There is more abundant evidence to show that inert ingredients of dusts such as carbon, hematite (iron), aluminum and gypsum exert a favorable action in cutting down and inhibiting the damaging results of silicon in the body. Inhalation of coal dust by miners can produce anthracosis to such a degree as to render the lungs and lymph nodes black as the coal itself and yet the function of the lung be little impaired. If an aggressive lawyer could exhibit the organs of one deceased to the jury he might show them the black lungs of a miner and expound on the ravages of invading dirt, where the dust played no part in death, and yet in a true case of silicosis where death was directly caused by dust, he could exhibit little in the gross lung because the fatal damage in the tissue is studied through the microscope. Nevertheless, any dust that contains more than ten percent of free silicon or its dangerous silicate must be considered as a potential hazard in the atmosphere. In general, foundry workers appear to face less hazard than workers in occupations having exposure to free silicon but not as safe as cement and lime workers or coal miners.

Specific gravity, size of particles and tendency of the dust to agglutinate determine how long it will remain suspended in the air. The factor of particle size is of primary importance. It has been determined that most particles smaller than one micron in diameter settle at a rate of from one to three feet per hour. Above sizes of five microns in diameter, specific gravity has more importance; for a specific gravity of seven the rate is sixty feet per hour, while quartz with a specific gravity of 2.6 settled at a rate of only twenty-five feet per hour.

It may be stated that with the exception of fibrous materials, and this includes aasbestos, any particle with a size greater than ten microns settles so rapidly that it plays little or no part in dust hazard. It is always to be remembered that the offending element silicon is only a fractional part of the foundry dust. The silicon being a hard, tough mineral, may exist in larger and heavier particles than other mineral elements in the dust. Hence the silicon particles may settle faster leaving the atmosphere dust composed mostly of non-silicon particles. Furthermore, dust samples taken from rafters in the foundry may yield a high percentage of silicon due to this accumulative concentration of the heavier particles in settling faster, and the atmosphere dusts may contain only a relatively small percentage of silicon.

In order for a dust sample to be a true index of the hazard to the worker it must represent that atmospheric dust that the worker inhales. Size of the particle also greatly influences the ease with which it reaches the lungs. In general, it can be said that few particles greater than ten micron in diameter reach the fine air cells of the lungs. Asbestos fibers, however, may offer an exception to this rule. The danger of the silicon particle increases inversely with its size. Gardner has shown that silicon dust particles with diameters less than three microns are particularly vicious in their ability to damage the tissues of the body. This may depend not only on the ability of the tiny particle to reach the lung but also on the fact that the damage wrought in the body is not all due to physical irritation but also chemical changes. This is shown by the fact that the changes of silicosis are found not only in the lungs but also in other organs such as the spleen where it is carried in chemical combination by the blood.

The concentration of the harmful dust is necessarily a most important factor. This is determined by dark field dust counts which express the number of silicon particles per cubic foot of air. The recent untimely death of Donald E. Cummings in an airplane crash, focuses our appreciation of the great work he did in measuring the hazardous concentrations of silicon dust. His so-called "Primary Threshold" indicates that a concentration of five million particles of silicon between 0.5 and 10 microns in diameter constitutes the upper limit under which a normal man may work for many years without impairing his health. He further established his "Secondary Threshold" which is a level of concentration of silicon particles beyond which silicosis and disability are inevitably contracted after an exposure of a few years. This Secondary Threshold he fixed at a level which exceeds 15,000 to 20,000 particles per cubic foot of air and stated, "As a broad generality it may be assumed that men with healthy lungs may work in silica without great danger for forty years at concentrations not exceeding the Primary Threshold or for ten to twenty-five years in concentrations between the Primary and Secondary Thresholds while two to five years exposure will be dangerous if the concentration is above the Secondary Threshold."

The disability resulting from silicosis varies from no disability to permanent total with certain death. It is to be remembered that a diagnosis of silicosis does not necessarily imply a disability. This is a point which always gives much trouble in compensation adjustments. A worker has an X-ray of the chest taken. A diagnosis of silicosis is made and the worker is told he has silicosis. He naturally believes that this is a disease in the lungs which is serious and constitutes a disability. A lawyer enters the picture and the setting is complete for an argument. But the argument should always be an open unbiased study of the facts, considering the factors of exposure, the extent of the silicosis and the degree of disability resulting. The degree of exposure is determined by records of employment and study of the working environment. This is the responsibility of management and industrial hygienist. The diagnosis and degree of disability is a problem for physicians. In general, it can be said that simple silicosis represented only by scattered discrete small nodules with no coalescence in the lungs, constitutes no disability. Beyond this we come into degrees of disability varying with the extent of coalescence of the nodules and the amount of pulmonary emphysema. Finally, when infection is superimposed on silicosis the degree of disability is great and permanent. In judging disability from silicosis it must always be borne in mind that symptoms referred to the lungs may also be present from causes other than the silicosis. But these are the technical medical problems.

The law governing silicosis in Ohio states that there is no compensation for any disability other than total. In my judgment this is unfair and unjust. We see many workers with sufficient silicosis to make them unable to carry on in their work as molders and yet perfectly able to carry on in light occupations outside the foundry. The loss of one hand is recognized by law as a partial disability and so too the loss of thirty percent of breathing capacity should be admitted.

Silicosis can be eliminated from industry. Engineers can institute safety measures to cut down exposure in the work room. Physicians can choose workers who can safely be employed in the foundry and weed out those who had better stick to the farm. Finally, and most important, the worker must play his part by adhering to the rules of safety and willingly cooperate with the physician in following general rules for health and submitting to repeated medical examinations for the purpose of detecting danger signs of damage and threatened disease.

Life at its best is dangerous as an occupation. Let us all make it safer and happier where we can. (Applause.)

Chairman Rentschler: Thank you, Dr. Skavlem, I think this is a very good study for the layman. I think it gives me a much clearer conception of silicosis than I have ordinarily had.

Is there any discussion, any questions you would like to ask the doctor?

Mr. Fred Marner: When you have your men X-rayed, Doctor, do you recommend that if they show silicosis influences they should be taken outside of the foundry?

Dr. Skavlem: I don't think that's always necessary. They should be kept under very close observation but they necessarily do not have to be removed from the foundry. The patient should be acquainted with the presence of sili-

cosis, the management should, they should all know it is there. He should have an examination at intervals of at least three to six months.

It is well to talk to that worker about what he does outside of the foundry, how he lives, where he lives, to examine him particularly as to the possibility of other infections coming in.

If I found a man with simple silicosis and he was perfectly healthy in every other respect I wouldn't necessarily take him out of the foundry, If, however, you find that this man has an apparent sinus infection, if he has an obstruction in his nose, a breathing apparatus that is faulty, or you find the presence of any other disease in the body which would contribute to the condition, I would immediately take him out, but you can picture a well man otherwise continuing in the foundry with safety.

Mr. Marner: Would you recommend employing a man if his chest X-ray showed that he has healed tubercular spots? Would you recommend hiring a man like that?

Dr. Skavlem: I wouldn't put a man with tuberculosis in the foundry.

Mr. Marner: You wouldn't?

Dr. Skavlem: And you are getting into the field of what I mean by tuberculosis, and I mean that tuberculosis in the lung itself, not so-called primary tuberculosis.

We are right in the midst now of seeing an awful lot of that being thrown out by the army, but when I am talking about tuberculosis in the lung itself, and a man with tuberculosis in the lung itself I don't believe should work in the foundry.

Mr. Domino: Is silicosis in its advanced stages incurable?

Dr. Skavlem: Of course, if we have silicosis established in the lung it is incontrovertible, it is there, and if it stays confined to the small discrete nodules, simple as we call it, it doesn't carry a disability but the scars are there. Fortunately we have nine times more lung than we need to carry on life and that's why we can stand a few scars in the lung and still be compatible with normal living, but if you mean that silicosis has become more coalescent as we call it, more tissues involved, and you get to a point where your vital capacity is lowered to such a point, then you can't carry on normal living, but silicosis established is there, it always will remain, it cannot be eradicated.

Mr. Marner: Can continued bronchial trouble in your employees be a forewarning or an awareness that they might acquire silicosis?

Dr. Skavlem: I would say that a person that has repeated bronchial infection should not be employed in the foundry. I think there in your employment examination if you find a man with chronic bronchial infection or sinus infection with repeated colds and trouble with bronchitis he should not be employed in a foundry.

Mr. Segraves: Doctor, you mentioned that the silica known as magnesium and asbestos being two of the greatest existing concentrations of silica dust. Did you mean that those are more harmful than some other well known silicas or is it the possibility that the silica dust itself can be accumulated in the human lungs much easier than other silicas? In other words, is it more dangerous to the person in the same amount than some other silica would be or is it more susceptible to hazards and injuries?

Dr. Skavlem: The most dangerous form of silicon is the simple magnesium silicate, the element itself, but you can get some of the components, the silicates where the silicon element is combined with another element like magnesium, magnesium silicate, but all the other compositions, all the other compositions, all the other silicates are not harmful, will not produce silicosis.

Now, that question arises where a claim for silicosis is brought in and when you go into the history there is no free silicon in the atmosphere or no asbestos and you can just throw out the claim of silicosis because no silicon, no free silicon, no silicosis.

Mr. McConaghy: Mr. Chairman, the nominating committee desires to submit the following names as your officers for the foundry session next year: For chairman, Mr. Harold Segraves, American Radiator & Standard Sanitary Corporation, Elyria, Ohio; for vice-chairman, John F. Lacey, Commercial Steel Casting Company, Marion, Ohio; for secretary, Mr. D. C. Wilcox, Machine Steel Casting Company, Alliance, Ohio.

(The officers nominated were elected.)

Adjournment.

METALS SECTION

Wednesday Morning, April 21st

This session of the Metals Section of the All-Ohio Safety Congress was called to order at 9:30 A. M. by Mr. E. H. Meeks, Transue & Williams Steel Corporation, Alliance, Ohio, Chairman.

Chairman Meeks: This is our second session of the Metals Section. Yesterday we had quite a nice attendance.

I am sure before the meeting goes along very far this morning we will have another good attendance.

It gives me great pleasure at this time this morning to introduce to you a speaker who I know will be of great interest, Mr. P. G. Leeper, Safety Supervisor of Republic Steel, Cleveland, Ohio, who will talk to you on practical methods in the elimination of machine hazards. Mr. Leeper. (Applause.)

PRACTICAL METHODS IN THE ELIMINATION OF MACHINE HAZARDS

Mr. P. G. Leeper, Safety Supervisor, Republic Steel Corp., Bolt & Nut Div. Cleveland, Ohio

Mr. Leeper: Mr. Chairman, good morning everybody. First of all, I hope you good people will be generous enough to allow me to tell you that for me this occasion is one of several firsts. This is the first time that I have ever had the privilege of attending one of your sessions here, and I want to tell you people that I am very deeply impressed by the things I have seen and the things that I have heard.

Since it is my first time here, naturally, it is my first attempt at being what you might call an active participant. And I think, men, for the first time, that I have some idea of what the meaning of stage fright is. I think I can say that because I now realize that many of you people have been connected with the safety game much longer than I have and because I fully realize and appreciate the broad and thorough knowledge that is represented here.

I somehow am reminded, fellows, of a little girl that lives in our neighborhood. This little girl is only eight years old.

She was born in Virginia at an Army Post and most of her life was spent there. She recently removed to Cleveland because her father right now is over in the Pacific on one of those islands.

I was out taking my usual stroll last Sunday morning and I met this little girl and her mother, and they were on their way home from Sunday school, and it seems at Sunday school the lesson had been about the crucifixion, and that the Sunday school teacher had given a very vivid portrayal of what happened there, and that little Carol Ann looked up at the teacher with very rapt attention, and when the teacher came to the point where they jabbed the spear into the Savior's side, that was just a little too much for the little girl, and she yelled out in a high shrill voice, "Mama, where in hell were the marines?"

Now, I hope along about fifteen minutes from now you people wouldn't yell out, "Where in the hell is the program committee?"

It is quite likely that some of the things you expect to hear mentioned this morning we shall not touch upon in the brief time we shall consume with our theme, which is "Practical Methods in the Elimination of Machine Hazards."

Many persons closely identified with safety and accident prevention are firm supporters of the belief that man-failure accident causes are predominant. Yet, many of these same persons believe that guarding and correction or elimination of mechanical hazards plays a very large part toward the elimination of accident causes. It is, I believe, a truthful statement when we say that man-failure causes the most accidents. It seems equally true that engineering revision and mechanical guarding have much to do with preventing accidents. Our thesis proposes to recognize briefly, the above fundamentals.

History is even now being made on the world's battle fields. And, as we view the gigantic struggle, is seems fair to say that future historians will refer

to us as living in the machine age or, at least, in a stronger phase of its development. Our industries, transportation systems, and even our homes are largely mechanized and, now, this condition has also become true on our battle fronts. So it is that we are born, we grow, we work, we play, we live and we die in a machine age.

Turn wherever way you will and we are surrounded by the symbols of this machine age. Daily we can see belts, pulleys, cams, gears, wheels, explosives, chemicals, switches, electric lines and the many other symbols which constantly remind us of the high powered and high pressured age in which we live. We have daily contact with this vast network of mechanism and, consequently, we face a toll of injuries and death which is appalling.

In considering this situation, let us always remember that the machine in all of its forms and types is man's brain child. Man conceived the machine, he first built it and he developed it through the years to its present high state of efficiency. Man gave it life and it is subject to man's will. The machine moves when and where man directs, at the speed he desires. It stops when man wills it or when the energy and motive power he gave it are exhausted. It follows then that the machine is dangerous as man makes it so and usually it is the abuse rather than the use of the machine that creates its hazards.

Now, what is a machine? Let us say that it is any contrivance to increase and regulate motive power and which acts mechanically at man's bidding. Remember, we said that man created the machine, so it would seem that the very first step in hazard elimination would be to use the right type of machine for whatever job is at hand. One example comes to mind with which we probably are all familiar. Certainly, no one would ever think of grinding a large heavy casting on a wheel that was primarily designed only for light tool work.

Assuming that we have the right type of machine, what about its location? Is it in a space where there is ample working room or are conditions cramped and crowded? What about the air? Is it fresh and pure? What about temperature? Is it well controlled? What about light? Is it properly illuminated? And noise. What about that?

Crowded conditions. Is the workman liable to strike another machine or fellow workman with that bar or some other object he may be handling? And can he get from beneath that overhead crane at the sound of the warning bell?

The air. Is it foul enough that it helps lead to that tired, drowsy feeling when the senses and reactions are dulled and retarded?

Temperature. Is it so cold that one shivers and shakes into an accident, or, is it hot that one faints and falls into the hazard?

Illumination. Is there sufficient light that a hazard may be seen, or, does one have to feel his way around and maybe right into the hazard?

Noise. Is it such that it drowns that warning device and does it fray and jangle nerves so that a taut and jumpy atmosphere is created?

Are we dealing with extremes when we consider the items just mentioned and are we striving for the ideal when we attempt to correct them? Maybe we are. And yet much has been done and much more can and will be done as we go forward in our struggle for hazard elimination.

A moment ago we contemplated having the right type of machine for a given job, and we briefly mentioned some of the conditions in and around the machine. Pulleys, belts, motors, etc., were not mentioned because we now propose to divide machines roughly into three classes, namely: New machines purchased from the manufacturer; machines designed and built within an organization; and the machines which are already installed and operating.

New machines probably present the smallest problem so far as hazards are concerned because many machine builders today are building guards, driving mechanisms, and other safety equipment right into and as a part of the machine. Overhead shafts, belts, pulleys, etc., are also eliminated as the tendency on new installations is toward individual motors and drives. This trend is aptly illustrated in the machine tool field. Today, many drills, planers, milling machines, shapers, lathes, etc., come onto the market with most, if not all, the dangerous moving parts fully protected and guarded. This is certainly another step toward the ideal in the elimination of machine hazards.

In the case where a machine is designed and built within an organization it seems fair to say that if there is enough genius and ingenuity to design and build a machine, it surely follows that there will be enough ingenuity to include devices for elimination of hazards. Guards which prove efficient in one plant and which allow people to work safely there because of them, might not be the answer in another plant. It is obvious that because of the many types of work

represented here and because of the lack of time we cannot go into very much detail.

Then, there are the machines already installed and it seems safe to assume that therein lies the big problem. Naturally, one of the first things thought of in elimination of machine hazards is guards. Naturally, one of the very first questions to be faced is this: What is a properly guarded machine? Before going further into this question, we are prompted to observe that even in this enlightened and progressive age of safety development and hazard elimination, there are many who feel that safety men are just a little overzealous in guarding a machine. Perhaps in some few instances there is a good foundation for such a feeling, but in most cases it is only fair to say that a safety man only wants and asks to be allowed to go far enough to correct or eliminate a hazard whenever and wherever possible.

So, to the question—What is a properly guarded machine?—let us quote a man whom we shall not name but who is Director of Industrial Relations for one of the largest concerns in our country. He says, "A well guarded machine is one guarded in such a manner that it cannot have accidents even when the operator does something that he has no business to do." Now follows the thought that such guarding borders on the over-enclosure of a machine and so makes it necessary to remove guards for adjustments and minor repairs.

Here again it is a matter of ingenuity. For example, if a guard must be removed for oiling and someone starts the machine without putting the guard back, an accident may occur. To offset this, there are several types of automatic grease cups and automatic oiling attachments; also extension tubes for oiling. Or even a piece of oil tubing can be run through a guard so it will reach a bearing, etc., without removing the guard. If the management, the operating heads, and the safety man will pool their ingenuity, the desired answer to most problems can be found. And, let us always remember that the operator of a machine can very often give us the answer to the proper guarding of his machine. Many, many times he finds ways of beating a guard and he does so because he feels that it is in the way and slows up his production. If he knows how to beat a guard, he may also know how to devise or improve one. Right here let us emphasize that it is not enough that guards be made of sufficiently strong material and that they be properly installed, but also that it is absolutely essential that they be properly maintained and kept in place.

The importance of guarding as a means of eliminating machine hazards cannot be over-emphasized. Most states now have strict regulations covering the guarding of equipment and many insurance companies actively campaign for higher standards in machine guarding. So, now, let's classify points in machine operation into two groups:

(1) Points of operation.
(2) Moving parts not at operation points.

Operation point guards should protect parts of machines where cutting, forming or shaping is performed and also points where operators are exposed to hazards from inserting or manipulating the stock. Operation point guards should protect operators both from moving machine parts and from moving materials. One of the first hazards thought of in connection with the point of operation is the danger to the hands and fingers. So, we immediately think of a device for removing the hands from the danger zone. One example is that of the cable which has one end attached to the ram of a punch press and the other end to a hand strap and then there is the sweep guard also used on a punch press. Without giving specific examples, let us note the fact that: Remote control devices; mechanical feeders and ejectors; interrupted movement devices; barricades, enclosures, hoods, etc., may also be used and as we leave the elimination of hazards at the point of operation, lets especially stress the possibility of tool design, as a great deal can be accomplished along that line.

We have touched lightly upon the point of operation, and time will allow that we but briefly mention some of the other items to be considered. Mechanical machine guards, other than those used at the point of operation, include hoods, covers, barricades and enclosures. Such guards help eliminate the hazards arising from belts, pulleys, flywheels, gears, chains, projections, etc. Other steps which may be taken are:

Enclose moving parts where possible,
Make unenclosed moving parts as smooth as possible,
Reduce vibration to the minimum,
Convey dust, vapors, gases, etc., away from machines,
Provide proper conveyors for handling material,

Make fast wearing and also adjustable parts as accessible as possible,
Where hand rather than automatic lubrication is used, special care and caution should be stressed.

And the inspection of machines and all their parts, by all means, should be regular and systematic and should be tied in with a well-planned and a well-executed repair program. Doutless there are other factors which might have been mentioned, but if those already referred to, along with their many ramifications, are rightfully considered, much will be done toward the elimination of machine hazards.

Now, where are we? We started by observing that while we live in a machine age that it was man who created the machine and gave it life, and that it is man's abuse rather than his use of the machine which has caused so many of its hazards. We gave one definition of the machine and observed that the proper type and size should be used for a specified job and that it should be placed in a proper location surrounded by proper conditions. We then placed the machine in one of three classes and very briefly dealt with elimination of machine hazards as affected by those classes. So, now, since we must have an operator for the machine, we come back to our starting point, man and mankind.

It seems fair and right to say that the worker whom we shall typify as man, rates a major portion of attention. This is especially true under today's trying conditions when so many new people are coming into the various plants for what, to many of them, is their first look into a new and strange world. Far, far too often this new world presents a picture that gives an aspect of fear and bewilderment, sometimes amounting to terror. It is highly important then, that the new man's first impression be governed by the most careful and considerate attention. It is essential that, so far as possible, the interview and test given to the new man should determine his mental, moral, and physical fitness to be near and around machinery. Or, for that matter, on any job. We have talked about guards and guarding the machine and certainly we must not overlook man. By all means give him all the personal safety protection and equipment possible, such as masks, goggles, safety shoes, etc., and be doubly sure that such equipment is the proper type and kind and that he is properly instructed in their various uses.

But, whether a man is new or whether he is a veteran, he should be governed and directed by a well-schooled and well-disciplined supervisory force. There is a saying that is almost 100 percent true and that saying is this: "If the worker hasn't learned, the instructor hasn't taught." This brings us to one final thought we want to note in this discourse and we shall designate that thought as The Key. We would emphasize again and again that training is the outstanding and the fundamental key in eliminating hazards and preventing accidents.

For engineers may do all the things mechanically possible to protect man from his machine and to eliminate its hazards but again and again, the careless worker, the misinformed worker, the unskilled worker, and the untrained worker will outwit safety devices and become a victim.

So, in the final analysis, The Key to hazard elimination and the best safety device is a trained man.

A man trained—trained again and again retrained to practice safe working habits.

Thank you very much for your splendid attention. (Applause.)

Chairman Meeks: Thank you, Mr. Leeper. Are there any questions you gentlemen would like to ask Mr. Leeper? If so, I am sure he would be glad to answer, although with that fine talk this morning I doubt there could be very much left in your minds in the way of what could be done to train a new man on safety hazards.

I want to take this opportunity to present to you gentlemen here your new president for next year, Mr. Ed Mandry of Republic Steel.

Mr. Mandry: Thank you. (Applause.)

Chairman Meeks: Now, before I introduce the next speaker I can't pass the opportunity up without introducing his father. I see him sitting in the back of the room. Will Mr. W. H. Cameron stand up, the grandest old man in safety. (Applause.)

Would you please come up and I will give you the honor of introducing your son to this audience.

Mr. W. H. Cameron: Billy, are you going to make a speech?

Mr. W. T. Cameron: No. I am going to talk with the boys,

Mr. W. H. Cameron: Well, gentlemen, I just dropped in here at this meeting and I don't want to take up any of your time, but it is a great thrill to come back to Ohio here and see the continuity and the great enthusiasm with which you have carried on this safety movement. I have been somewhat on the side lines for the last two or three months but has done a great deal of thinking and reading and visiting, and I have a distinct impression that the movement is growing tremendously fast and in a very successful way.

I sometimes imagine that there is a good deal of stock talk about decreasing the number of accidents and so forth. The very essential thing to me is the movement you express in the practical work you are doing in the plants. I hope you realize that we have made in this social movement more progress than any other equivalent social movement that has ever been undertaken in the world.

This country has done better than any other country in the world. I saw the report from one of the old line insurance companies just two or three days ago. They were organized about the time of the National Safety Council, 1914, and we find they had 470 deaths, and last year they had a 53 percent reduction and a 20 percent increase in the number of people living in the State of Massachusetts.

Now, that is about the record through the country.

I met a good many people who are very pessimistic about the safety movement because everybody is not doing it yet, and you know and I know that through this struggle of thirty years, it is a very complicated subject. There is no social movement or activity in industry that is so complicated as this safety movement, the establishment or the change of the habits and customs of doing the work in the plant, the responsibility between the employer and the employee.

I never heard a really satisfactory safety speech; I mean a real downright, penetrating, in the ground discussion of what the safety movement really involved, and there has been plenty of interpretation of it. That is a practical problem, but there is a combination of theory and practical problem, and my word to you this morning is just this, how proud I do feel personally that I came down here and I am just thrilled to see the attention and the devotion that you are giving to this movement here in Ohio and leading the country and establishing the reputation of this country in this war time for this very, very important problem. Thank you. (Applause.)

Mr. Meeks: Thank you, Mr. Cameron, Sr. Our next speaker is the grand old man's boy, as I might say, and a very, very close friend of mine. Most of you perhaps have known him in the same way. So, it gives me great pleasure at this time to re-introduce to you young Bill Cameron. (Applause.) He is the Chief Safety Advisor, U. S. Department of Labor, Division of Labor Standards, Washington, D. C., and will talk to you on safety in your job training program —how and why.

(Applause.)

SAFETY IN YOUR JOB TRAINING PROGRAM — HOW AND WHY

Mr. W. T. Cameron, Chief Safety Advisor, U. S. Department of Labor, Division of Labor Standards, Washington, D. C.

Thank you very much, Ernie. It is a real pleasure to be here. I haven't missed one of these All-Ohio Safety Congresses since they started in the Fall of 1928, so this is just like old home week for me, and I appear before you with some timidity.

In the first place, having my father precede me reminds me of three or four years ago when we both happened to be on the same session of the Western Safety Conference out in Portland, Oregon. The papers had played this up as though it were a vaudeville team and called it a father and son act.

Well, I can assure you there has been nothing prearranged in this, and as father has said on a good many occasions, he is afraid of being ruined by amateur competition. (Laughter.)

I would like to make that safety speech that you think ought to be made but I won't attempt it this morning. It might take several hours to do it.

I was awfully interested in Paul Leeper's very thorough and scholarly and fundamental talk on the guarding of machinery. Certainly no safety program should ever be started in any plant until the management had indicated its sin-

cerity in the program by covering up every possible hazard, by guarding every machine and by providing the personal protective equipment that is needed to keep the workers safe on the job. These other things come along later, and your Program Committee did well, I think, in putting these two talks in their proper order, in starting out with the fundamental principles of guarding, of correcting the environment in which people work and then, secondly, the training of the persons to use the machinery and the equipment in the safest possible way.

I am going to stick pretty close to my assigned subject this morning, Safety In Your Job Training Program, How and Why. I would, however, like to rephrase it and talk a little bit about the why first and the how second, and I wonder, Ernie, if I could have the blackboard over here?

I have had a little experience teaching one of those ninety-six-hour safety training courses, and I perhaps can make some of my points clearer if I can use the blackboard.

I think some of you are familiar with what we call the accident sequence. The safety engineers for some years have been trying to take accidents apart and see what makes them tick, what happens when the stage is set, and finally we have an injury.

Well, Bill Heinrich of the Travelers Insurance Company, who has given a great deal of philosophical study to the subject of safety has evolved what he calls the accident sequence, and he likens this sequence to a game we used to play as kids, lining up a row of dominoes on end in such a way that when you push the one domino, it pushes the second over, and the third and fourth, and finally the whole row falls down, so I am going to draw five dominoes on end on the blackboard here.

Now, if we call the last domino in this sequence the injury, we have always preceding the injury an accident. In other words, something has got to go wrong before we have the injury. Somebody said that the accident is the dropping of the casting; the injury is when it hits you on the toe.

The accident is when we fall off the roof; the injury is when we hit the ground. The falling does not hurt any; it is only when you do hit.

Some statistician figured out that the accident happens about twenty-one times before it causes an injury. In other words, this fellow who has got to lift a rather valuable piece of equipment, say an armature from a motor from one place to another, and in the course of his employment he may drop that armature twenty-one times on the floor. It breaks the armature and causes some property damage and some material damage, but on the twenty-second time that armature drops on his foot and breaks his big toe and for the first time the accident which has already happened twenty-one times before shows up in the records as an injury.

So, we are not only interested in preventing injuries, but it is just good business to prevent accidents, accidents which damage material and equipment and which delay production schedules and so on. So, we are interested in preventing injuries and accidents.

Now, preceding the accident you always find one of two things: You find either an unsafe mechanical condition or an unsafe act.

The National Safety Council recently made a study, a very thorough analysis of a thousand accident cases, accidents which had caused loss of time, which, in many cases, had caused amputations, and in several instances had caused death, and they found that in breaking these down, the accidents that had caused the injuries in 20 per cent of the cases were due entirely to unsafe mechanical conditions. In other words, there is nothing the worker could have done to have avoided the injury; something just broke or something happened which involved the worker as an unsuspecting victim.

There was another 20 per cent in this group where it was entirely due to an unsafe act. There was nothing humanly possible that could have been done to have protected the equipment or to have guarded the machinery or something or other. The worker simply through his own ignorance or lack of instruction or carelessness—a word I do not like, by the way—but some failure of the person himself caused another 20 per cent of the accidents, and in the remaining 60 per cent there was a combination of both, an unsafe mechanical condition and an unsafe act.

In other words, if greater attention had been paid to the floors, to the machinery, to the ladder, to the equipment, those 60 per cent might have been prevented. On the other hand, if there had been better attention to training, to supervision, to understanding on the part of the worker, those same accidents

would have been prevented. So we have, then, always an unsafe mechanical condition or an unsafe act.

Now, preceding both an unsafe mechanical condition or an unsafe act is the fault of somebody, the fault of a person, so our domino then that precedes this is "Fault of Person." Now, that person may be the general manager; it may be the Board of Directors; it may be a straw boss; it may be the worker, but somebody allowed an unsafe mechanical condition to exist or somebody committed an unsafe act or somebody did not train the worker so he would not commit unsafe acts, so it was somebody's fault, so, preceding all of these conditions and all of these acts we have the fault of a person, and then we want to know why persons commit faults, so we have got to begin to go back into their background; we have got to know whether they were mentally fitted for their jobs. Was this new foreman who was just put on as a foreman capable of being a leader of men? Was the fellow who installed the machinery, the master mechanic or whoever he was, a really good mechanic? So, we get back then into the background of the persons that make up industry, both management and men, and for want of a better term we call this "Social Environment."

Now, to carry out this sequence, of course, what we are interested in doing is to break this sequnece at as many places as we possibly can. As you see now, we have got a fellow who is kind of dumb; he is put in a situation in unfamiliar surroundings that he does not know much about. That starts this domino over right at the very beginning. He is the fellow who is the square peg in the round hole; he does not belong there, and that starts this domino over. That comes over, and this same fellow commits a fault, makes a mistake, commits an unsafe act. It may be in connection with an unsafe mechanical condition that knocks this over that causes an accident. The accident causes an injury and he winds up in the hospital. What we want to do, of course, is break this sequence wherever we can by simply lifting out these dominoes as many as we can from the sequence.

The one that safety directors and safety engineers usually attack first is this one, Mechanical Safety Condition and Mechanical Safety Act. If you follow out the preachings of Paul Leeper this morning you are not going to have any unsafe conditions; you are going to engineer your entire operation, your entire factory from a safety standpoint, and if you follow out what I am going to tell you a little bit later about training, you won't have as many of these unsafe acts committed.

So, we want to remove this domino. You may still get this unsafe worker or this dumb foreman who commits a fault, but because you have got a safe environment you are going to have this domino eliminated. These two will fall over but you will have no accident and no injury.

Now, the use of personal protective equipment, of course, is something a little bit different. That puts a barrier or a wall between these two. In other words, you put a pair of goggles over a worker's eyes. The emery wheel breaks. The emery wheel breaking is an accident, but the fact that he has got goggles on prevents an injury.

Now, of course, we are interested in keeping emery wheels from breaking, so we go back to this unsafe mechanical condition. We want to know why the wheel broke, and we find it was somebody's fault. They put the wrong speed wheel on that grinder. Then we want to know why that fellow put the wrong wheel on the grinder, and we find that he had no business even putting a wheel on the grinder, so we get into this "Social Environment" domino.

Now, this one over here, if we can break the sequence at the very beginning, that is, of course, very desirable. This gets over into the realm of the personnel department and the medical department, in other words, the personnel director, the employment man, has got to pick the right kind of people for the job. The medical director has got to see that people are properly placed as to their physical ability.

We no longer have a choice any more. You can't pick out the ten best men physically fit out of a hundred and give them jobs. You take everybody. As one ad said, "If the body is still warm bring it in; we have got a job for it." (Laughter.)

So, you have got older workers and younger workers, fellows who have never been in industry before, fellows who don't know how to lift, and so on, fellows who are not structurally built to lift well, fellows who are overly susceptible to occupational disease or any number of things, so through an intelligent medical placement program you can give jobs to all these workers, but you simply place them where they are not going to hurt themselves or somebody else.

Over here in the "Fault of Person" that is where we have got to develop our safety consciousness, our general desire on the part of everybody in the plant, from the general manager down, to not have any accidents, and that not only involves the worker right at his machine but when he is in the work room generally or in the plant or in the yard, and if you really make this sale, that fellow is going to be a better automobile driver; he is going to have a safer home, and that is where our training comes in, right at this point. That is the domino about which I am going to talk.

Now, on this matter of job training we have two points, two things to emphasize. One is to weave in or, as the college professors say, integrate safety training into job training. How many in the room have had J. I. T.—job instructor training? I see the big majority have had it. In other words, you know J. I. T., you know the ten simple steps for getting knowledge across to people to get them to act. You also know that over in the second column of the job breakdown sheet for training a man on the job you have the key points, and you remember it says there that the key point is anything in a step that might (1) make or break the job, (2) injure the worker, (3) make the work easier to do, that is, knacks and tricks, special timing, bits of special information, and so forth.

So, as you lay out the job breakdown sheet step by step that you are going to teach this worker to do, you should integrate or weave in the safety instruction so that the fellow has got to put on a pair of goggles when he does the job. There is a certain point where he puts on the goggles, and that becomes part of his instruction, which is just as much a part of the job as clamping it down in place or jigging it or whatever is necessary. That is very important, that safety be a part of good job instruction.

Second is the step of the overall safety training, the kind of training that will guide workers' actions in new situation in places in the plant other than right at his machine. That is described as a series of concentric circles. This inner circle indicating the man right at his machine, this next circle indicating the shop or the building in which he works and this is his immediate environment. He may be a punch press operator and you may teach him to operate that punch press safely and correctly so he can do it hour after hour without getting hurt, but unless you train him in safe operation in the rest of the plant, he is just as apt to pick up a washer and toss it across the room to bean somebody else on the head, or, if he has got to go over to the tool crib and get something over there, he is apt to engage in a little horseplay or he is apt to leave something in the aisle or do something else which he was not trained not to do, so your trainnig has not only got to be at the machine and the job, but you have also got to give him safety training in how he conducts himself in the immediate environment of his machine.

Typical is the machinist who has to occasionally, three or four times a day, leave his lathe and go over to a grinder and sharpen his tool. Now, you have taught him how to set up his work in the machine, how to do it safely, but you have not instructed him on how to use this grinding drill, how to set the tool rest, the fact that he has got to have the glass shield in place or put his goggles on, so the training has got to extend to the immediate environment.

Then it has got to extend to the plant as a whole, the lunchroom, the washroom, the locker room, the entrance into the plant and all of the other places that he may have to go in the plant to do any work, and then, of course, if your safety is really carried out as a number of large plants are doing, you will get out into the outer circle, which is the community environment. So, you can't be content to just think of safety training as job training.

I have heard too many people say, "Well, if you teach the man how to do his job correctly he will do it safely." That will keep him safe down here at the machine but it won't keep him safe in the rest of the plant and out in his home community.

Now, as I think many of you know, the United States Department of Labor, in cooperation with the United States Office of Education, labor, industry, and the colleges of the country have been conducting short, intensive training courses in the fundamentals of accident prevention. Because the money that Congress has appropriated is for the subject of engineering, we call the course "The Fundamentals of Safety Engineering," although I do want to make it clear that it is no one's intention to graduate in ninety-six hours qualified safety engineers. It is an excellent springboard for safety leadership, leading eventually, after experience on the job, to safety engineering.

I think perhaps steps that have been taken in this training course will be

rather interesting. By the way, the training course embraces all of the things that a person needs to know to run a safety program. Safety is not very successful in any plant unless it becomes somebody's baby. You have got to pin the responsibility for the operation of the program on some one person. It may be a full time job; it may be a part-time job, but until you get that person who becomes a helper and advisor to every superintendent, every supervisor and every foreman, you don't get very far, so you have got to pin it on a person, and these training courses which have been run around the country are to provide that trained safety leadership.

The course, as I think most of you know, is open to any key supervisory employee who has had a high school education or its equivalent in practical work instruction. It covers the background of what causes accidents and how they can be prevented, with a number of sessions on mechanical safeguarding, on how to guard machines and processes, on how to stimulate and maintain the interest of the workers in the safety program, on how to bring the foremen and the supervisors into safety, how the management has the prime responsibility for safety and how the line organization, the supervisors, have the responsibility for the safety of the workers under their supervision.

That course has been given in 109 colleges. I think it is rather interesting to show how the thing works out.

One hundred and nine colleges of engineering have conducted these courses around the country. They are not conducted on the campus but rather out in the industrial centers where the accidents happen. Somebody said recently that our national accident toll is nothing more than a combination of a number of local accident problems, that you can't stop these eighteen thousand or nineteen thousand workers being killed in industry every year until you get right down to the places, the communities, the factories where these hazards exist which are liable to injure and kill many.

So, we tried to fan out this education through this standard training course through 109 engineering colleges throughout the country. Those courses have been conducted in about two thousand locations and they have been taught in every instance by practical, experienced safety engineers.

The debate came up at the beginning as to whether we could teach safety to the college professors or teach safety engineers to be good teachers, and it was the unanimous opinion even of the educators themselves that you could do much better to take the practical safety engineer out of industry who had had years of experience in running a safety program and give him a short course in how to teach and how to put his stuff across than you could ever try to teach safety to a professor of engineering.

So, there have been about two thousand locations and about two thousand of these instructors who have given these courses. Those classes average from twenty-five to thirty-five key supervisors from industry in each class, so that carries out so that now there either are enrolled or there have been graduated from these classes about thirty-seven thousand safety leaders, persons who are now ready or are already back running safety programs in war contract plants and other places.

Now, that is step one in this program. That has taken about two years to complete, and the next step now is to take about thirty thousand of these graduates of the course, and safety engineers and other persons qualified to do it, and teach and implant a safety training course for foremen. I think the foreman has been recognized everywhere as the key man in a safety program. God bless the foreman. We pin everything on him. He is responsible for cost control, quality and quantity and everything else, and then we make him responsible for the safety of all these workers that are under his supervision, and I can tell you, gentlemen, the foremen of this country have discharged that responsibility well.

Wherever you find a good safety record in a plant you will find a swell bunch of foremen who know their job and know safety and who are doing something about it. (Applause.) I am glad to see I have got one or two foremen in the audience. (Laughter.)

Now, what we hope to do is to take these safety leaders that have been trained or are already safety leaders, about thirty thousand of them, and equip them quickly to teach and implant training courses, about a 20-hour course somewhat similar to J. I. T., except it is twenty hours in length and covers the type of thing that a foreman, sub-foreman, straw boss, lead man needs to know to do his safety job among his particular group of workers.

We thought of only those things which come under the foreman's jurisdic-

tion. After all, he has got to take pretty much the equipment that has been provided. It is a rather laborious road to get the whole department revised or revamped or the machines re-located, so he takes what he has got both in terms of material and men and does the best he can with them, so this is assuming that the foreman is taking things pretty much as he finds them, and it is to give him help in doing the best he can with that equipment and material and men.

The course consists of ten sessions about two hours in length, and in each instance the session will start off with a twenty minute slide sound film strip, of which I have an example here this morning, No. 1 in the series, and if your chairman wants to devote the time, and you fellows want to do it, I would like to show you example No. 1 in this series of courses.

The subjects are as follows:

(1) Follow the Leader. Management and supervisors joint responsibility.
(2) Cause and Cure. Methods of discovering and correcting accident causes.
(3) Guard Duty. Principles of safeguarding against mechanical hazards.
(4) Safety is in Order. Importance of providing safe working conditions.
(5) Brain Beats Brawn. Correct supervision in handling materials of all kinds.
(6) Right Dress. Need for proper clothing and personal protective equipment.
(7) Doctor's Orders. Provisions for care of industrial injuries through First Aid.
(8) Principles and Interest. Maintaining employee interest in the safety program.
(9) Stop, Look and Listen. A plant safety inspection committee is pictured at work.
(10) Production with Safety. Controlling workers' acts through training and supervision.

Each leader instructor of these courses will be provided with a simple little guide or manual. The foremen will be invited to come in and participate in this course. The safety leader or the safety director will set the stage and will ask that the film strip be shown and then will start a general round-table discussion by the conference method to bring out the points in that film to clear up any questions which may be in the minds of the foremen, sub-foremen, lead men and others taking the course.

Let me emphasize again these two points, this two-fold job of training workers, one, integrate or weave into your job training program the elements of safe work; secondly, engage in a general overall safety training campaign, an interest arousing campagin to keep the worker safety conscious and safety minded when he is at other points away from his immediate machine.

Somebody said not long ago that safety is a way of doing work, and certainly it is not necessary to tell this group that the safe way is also the efficient way and that there is nothing sissified about safety. Thank you very much. (Applause.)

Chairman Meeks: Now, in case there are any questions before showing this film you may ask them. I think we should have this practical film. Is that agreeable with all you gentlemen here? (Applause.)

Bill, I think they would like to see the film, but are there any questions you would like to ask Mr. Cameron?

Mr. Robert H. Ferguson: Ernie, there is one question I would like to have him enlarge on just a little bit. Bill, you touched on this particular phase of training, yet we find a lot of places in industry today where safety activity has become subservient to training.

I had a long discussion last night with a gentleman who was running into that same thing. I have talked to many of the boys about it. What we find when we go out and train the individual is that there is not enough of the actual job practice nad we are still dealing with human nature. I wish you would enlarge on that point. You just touched on it briefly and I wish you would say a little more about it.

You made the second point there. You explained the domino thing to me from Heinrich's theory a lot better than I have ever seen it, this morning—I mean that. You take J. I. T., we have taken it all the way through our courses and we are now in the second round, and what I think is way above J. I. T. is J. R. T., job relation training, which I think is splendid, but are are stressing everything we can get hold of on training, and yet we fail to get it across.

I am glad you are going to show this picture. I haven't seen any of them. We found out by using the old series of National Safety Council, as you mentioned here, we saddle everything on to the foreman and yet we don't give him enough help out on the job. In other words, we have taken these National Safety Council pictures right out to the steel plants for the men, but we haven't finished it.

Mr. W. T. Cameron: That's right. I think I got your point now. If you are going to give a J. I. T. program to a foreman you can't expect him, unless you give him help, to know where to weave in this safety instruction.

Mr. Robert H. Ferguson: That's right, and it can't be done just today. It has got to be done every day, just like your safety program.

Mr. W. T. Cameron: That's right. First I would like to see a marriage between the safety man and the training man for the plant. Too often they are divorced, that is, the safety man is out watching operations, out checking the mechanical hazards, working with the engineering department and the training man is over here in the personnel department setting up the safety programs, calling in the foremen, and the safety man isn't even there, so I think step No. 1 in the process of weaving these things together is to get your safety man and training man together. Then, as these jobs are analyzed, each and every one of them, on your job breakdown sheet, I don't think you can depend upon the foreman to know all of the safety practices that go in.

He has got to have some help and assistance on the part of the safety man, and I think that as you come to analyze the various jobs and the proper way to learn them, that you have got to have a safety man present.

I know I have had a lot of friendly arguments with Chan Dewey, who is the head of training within industry division, and Chan will point out how you can break down a complicated operation into twenty-four simple steps, and he will outline the steps, and I will say, "Chan, you haven't given a bit of safety instruction in that job." For instance, setting up a drill press. Then Chan will say, "If you set it up this way or that way the man can't get hurt."

I said, "Chan, you have said nothing about sleeves. One of the instructions should be short sleeves. No neck ties; no finger ring. You have said nothing in your job instruction about using a brush to brush chips off instead of using your fingers, and you have said nothing about wearing goggles when you are drilling certain types of metal and so on."

That is where the safety man has got to sit down with the job break-down man, the foreman, and point out these places where safety must be woven in, and that is a tremendous job to do. I think perhaps these films, only three of which are ready now, are going to help the foremen to visualize the places where they can weave safety into job training, and I hope so.

Are there any other questions? I would be very glad to do my best to try to answer them.

Mr. W. H. Cameron: I wonder if you would be patient with me for just one minute longer. In respect to what has been said about safety training, this is a tremendously significant fact, that training has been going on this past year or year and a half.

Way back in 1909, when I had eleven steel plants under my control I said that the time would come when we would have 250,000 professionally trained persons to lead and handle and supervise this particular job.

A short time ago I was in a general audience when Professor Pitkin of Columbia University tried to tell of the future of foremen in the United States, and then he told about Government employment, and so forth, and then he said, "I can see a job of a quarter of a million professionally trained safety experts that will do this job throughout the country. We have got to train all our citizens from the time they first go through school all through until they die, safety principles. They have got to be sympathetically interested in this safety program, but we have got to have professional people."

To date it has been very difficult to bring about this safety program, as Bill explained this morning. It is a most significant fact that 90,000 people, or 50,000 people, had this training, and we have got to expand it. It may take fifty years to do it, but if we are going to have a safety job done in this country we have got to have professional people like teachers and people that understand the technique of this job go into all kinds of plants, communities, and all kinds of institutions and lead this thing and see that the job is done, so you can see how tremendously important this enterprise is.

As Bill described to you this morning, it is the thing we dreamed of for

thirty years, How can we bring about this education and how can we find jobs for these trained persons? That has been a very difficult thing. We have done some training in years gone by, but after we get the men trained for the jobs then we can't find the jobs because certain industries and certain employers are not ready to employ the professionally trained person. So, as we study the national safety movement and say we have to train everybody on safety, at the same time we have got to train the specialists, the persons that know the job thoroughly, who make a profession of safety engineering or safety leadership.

It is a most significant job to be done and we should have 250,000 or any figure you may mention to go into the plants, the big plants, the little plants, and all institutions and see and follow through this leadership job that Bill has so well described to you this morning. Thank you. (Applause.)

Chairman Meeks: I would like to go further, Mr. Cameron, and say that we should make 130,000,000 people safety directors and start our class instead of waiting until industry takes them and teaches them. They should have a lesson right at the first grade in school and in their homes and then we would have safety workers all the way through.

Mr. W. H. Cameron: That is right.

Mr. Hays: I think, Ernie, you and the rest of the Ohio gentlemen will be interested in this development. In the City of Cleveland they are now going ahead with the idea of using this 20-hour course, one part of which you will see here, in all of their vocational educational shops in the City of Cleveland. There is a similar plan in the development stages with the Director of Vocational Education in the State of Ohio, so your idea of training them in the schools, Ernie, is not so far off.

Mr. Mandry: I might say that is a fact. I just mentioned to Bob Ferguson before you got up, Mr. Hays, that I believe there will be a lot done in that respect. I have been out to a lot of technical high schools myself to select trainees for various machine shop jobs and other work.

It would really surprise you to see some of the practices going on in vocational schools, and one of the big things that prohibits some good training is money. Industry will donate maybe a machine to them that has been out of use for some time, and maybe the guards have been lost, something of that kind, and they do not have the money to put the new guard on.

The other thing is, I think the machine shop foremen in those vocational schools certainly ought to attend some kind of safety course, because it is surprising to walk into a high school and still find a pair of goggles hanging on an emery wheel, in an industry that has been out for many, many years, as you know, and a great many other things.

I think anything you fellows can do along that line to help them would be appreciated. We all know that in schools a lot of times it is a question of money, but certainly machine shops ought to be taught that young men should not grind on emery wheels without goggles.

Mr. Hays: Well, Ed, I think you will be interested in this. Les Speers who, you know, has already enrolled in the ninety-six hour course, and as soon as he finishes that every shop having instructors in the City of Cleveland will take the ninety-six hour course. They, in turn, will teach every instructor and foreman, including the plant foreman in the twenty-hour course, which you will see part of this morning, and we are also working on the inter-weaving of safety instruction with the job instruction in all vocational shops in the City of Cleveland.

Ohio generally is not going to be very far behind. We are using Cleveland as the guinea pig.

Chairman Meeks: I know you are all anxious to see this picture, but, on the other hand, if there are any other qquestions, they are very interesting, gentlemen, so get them off your chests.

Mr. W. T. Cameron: We can always have questions afterwards, Ernie, if anybody thinks they are interesting.

Chairman Meeks: All right. Let us go ahead with the picture.

(At this point the first in the series of safety pictures was shown.)

Chairman Meeks: Gentlemen, I think the pictures speak for themselves, and if we all carry back to our plants, as the picture has said, large or small, and follow through, we hope that next year we will have a lot fewer accidents than we had this year. Now, are there any questions you would like to ask Mr. Cameron?

Mr. W. T. Cameron: I would like to say, in connection with these pictures, this is only the opening one of this series of ten. As I read you the titles, you remember they get into such subjects as machine guarding, training the new workers, and other things.

Now, through a grant of funds made available to the National Safety Council from the War Production Fund to Conserve Manpower, all of the production costs of these ten films have been taken care of. It cost $30,000 to produce ten films or will have by the time the project is completed, which will be about the 15th of May, which means that any industrial plant can purchase the set at the rate of about $3.75 each picture or $37.50 for the ten. That includes the price of the raw film stock and the price of the records. With each one of the ten strips goes this leader's manual.

I think there were some samples of these leader's manuals in with the record there, so that following the showing of this film, whoever is leading the class can get up and conduct just a small round-table conference.

You notice that the frames were numbered in such a way that if there is some discussion of a particular operation, the operator can turn this thing back to frame No. 47, and you hold it there and talk about it, so it is a real training course, not just an inspirational series, and the pictures that follow in the set even get more specific than this one does.

It was produced jointly, as you noticed, by the National Safety Council and the United States Department of Labor, Division of Labor Standards.

Mr. Mandry: He was a little high on his frequency there I thought.

Mr. W. T. Cameron: Yes, that ought to be pointed out in the discussion that follows. We should make a note in this manual. That is only mimeographed. I don't see how we can change the narration of the picture, though.

Mr. Ferguson: I would hesitate to use that particular thing unless I had a certain trained man present to explain it. Also, the frequency rate given is pretty high, ten. I think that is high.

Mr. W. T. Cameron: Well, certainly no plant should exceed ten, as is pointed out. It then went on to say that many plants have produced frequency rates of zero for many months at a time.

Mr. Ferguson: This series of films is developed primarily for firms that have not done much as far as safety is concerned.

A Member: Mr. Cameron, where do we buy these films?

Mr. W. T. Cameron: Right from the National Safety Council, 20 North Wacker Drive, Chicago, Illinois. They will send you full information on how to obtain them. This is their foremanship safety training series.

Chairman Meeks: Any other questions?

Mr. Ferguson: I don't want to talk here all the time on these things, but I think in your original remarks relative to this safety class, I am going to talk of a personal experience I had. You mentioned two thousand locations which did not bring out the fact of how many instructors there are in these courses. I bring that out primarily because I know a lot of us who did go in and do the teaching had to be brought up on our toes a little bit, too.

Mr. W. T. Cameron: Yes, it seems the instructors get more out of the courses than the students because they have to dig back to get the stuff out and put it in presentable form.

Mr. Ferguson: That has had a definite effect on our program.

Mr. W. T. Cameron: It certainly has. That has also been true in this committee of National Safety on Manpower. These 550 industrial engineers who volunteered to go out and call on little plants to help set up a program were greatly benefited. It is a lot different running a program in your own plant and talking to the management of 50 or 100 men in a plant and telling them how to set up a program that will really put you on your toes.

Mr. Ward E. Young: Much has been said about safety engineering, but this is a practical phase of it. Nothing has been said about spot painting or so-called three-dimensional painting as a matter of protection. I would like to know if there is anybody here that has had experience with it, and what the results have been.

Mr. W. T. Cameron: Has anybody had any experience, the question is, with the three-dimensional painting? That is, as those of you know that have seen this DuPont Philadelphia film, it consists of painting your walls and machines a certain color, which reflects light well, and then taking the point of opera-

tion of your machine and high-lighting it. In other words, you point out or spot-light the danger spots on the machine with a light colored paint so that your dark material that is feeding in stands out more sharply against the danger spots.

Has anybody had any experience with that in putting it into use?

Mr. Gerald M. Fluke: We are experimenting at the present time with that very thing. We have a drill press and a vertical boring mill painted, and we have had them painted about two weeks. The report we get from the operator is that his eyes are not nearly as tired at the end of the day as they were before we painted the machine. That is the experience we have had to date.

Mr. W. T. Cameron: I think if you forgot all about safety and just did it from the standpoint of plant efficiency and better use of manpower, you would pay for all the paint and the time you spent on it.

Mr. Edward A. Laczko: I haven't had any personal experience in this myself, but our general safety committee at Schnectedy informs us that it has been given a trial in a number of our plants and they have forwarded the suggestion to a number of plants in our organization to give it a trial, as they do recommend it.

Mr. James Byrum: Gentlemen, we have done quite a bit of experimenting in connection with paints. Practically all of our machines in the machine shop have been developed, and all of our shears in all sections of our plant have the point of operation brought out very clearly by the application of this paint.

I want to say that I think it is one of the most advanced things we have done up to the present time to attract the men's attention to the point where he may become injured, and as other men have said here, we find that it is more pleasant on the eyes.

In other words, you get away from your old constant seeing of a dark, dirty point of operation, which you just don't eliminate as a rule unless you have the machine painted often, and the outline at the point of operation is made very distinct.

Mr. W. T. Cameron: Thank you, Jim. I might mention that over ten years ago the American Rolling Mill Company put in a job training program with emphasis on safety along the lines of J. I. T. and the rest of them.

I happen to know that they taught cranemen how to operate cranes and shear men how to operate shears, and a great many unsafe practices had become habits, and through a job trainnig program they were able to correct those bad habits and brought about much safer operation.

Chairman Meeks: Are there any other questions? I might say that we cut the session short in the way of speakers this year because of the fact that our program was intended to be a little longer. Rather than have three speakers we cut them down to two so that we would have more discussion.

Now, if there is any more discussion or any questions, I would like to have them.

A Member: Are the films for the foremen's training course available to small manufacturers who do not belong to the National Safety Council?

Mr. W. T. Cameron: Yes, that is correct. All the membership restrictions have been removed in the case of the purchase of these films. Any plant can buy them. We only got release of priority material to produce 500 sets. There already have been 200 sets ordered. Most of the colleges of the country have bought a set or two to use in the ninety-six-hour course, so I suggest you get your orders in if you want to get a set.

Thereupon the session adjourned.