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Current Safety Topics in the PULP AND PAPER INDUSTRY

As presented in the
Sessions of the Pulp and Paper Section
at the 1951 National Safety Congress

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Volume 26
Transactions
39th National Safety Congress

NATIONAL SAFETY COUNCIL
425 No. Michigan Avenue • Chicago 11, Ill.



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New Ideas...

If safety is to keep pace with today's rapidly advancing technology, we must continually have "new ideas."

Each year, at the National Safety Congress, the ideas and experiences of many of the nation's top safety men are presented in the various sessions. Many of these ideas, devices and methods, first presented at a Congress session, later become generally accepted within their fields.

In order to present this information conveniently and at small cost, the Congress Transactions are published in volumes, one for each Section or Division, along with a General Sessions and Detailed Index to all volumes. The 34 volumes of the 1951 Congress Transactions are listed on the last page of this volume.

Safety directors everywhere have found the Congress Transactions a useful aid in their accident prevention programs. In industry, for example, their judicious distribution to key personnel in management and supervision has proved to be of invaluable service.

In preparing these Transactions, the proceedings of the Congress have been condensed and edited for reference purposes. Complete original manuscripts, with any charts or illustrations which were used, are available in National Safety Council files. Views expressed at the Congress or in this record are those of the Congress participants and are not necessarily those of the National Safety Council.

THE PULP AND PAPER SECTION

This volume is a record of the sessions held at the 1951 National Safety Congress by the Pulp and Paper Section. The conduct of these Congress sessions each year is only one of the many cooperative activities which the Pulp and Paper Section carries on in behalf of its members, and for the benefit of accident prevention work in the pulp and paper industry generally. The Section gives guidance in the preparation of a great variety of technical and educational material useful in the day-to-day safety programs of pulp and paper plants. The activities of the Section are under the direction of its Executive Committee, the members of which are listed at the close of this volume.

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Fundamentals of an Effective Safety Program

By E. J. GAYNER

Brunswick Pulp & Paper Co., Brunswick, Ga.

You gentlemen gathered here today are most surely cognizant of the fact that certain basic fundamentals are an absolute must for a plant if it expects a well-rounded, effective and efficient safety program that gives results. Some of these fundamentals, and by no means are they listed in the order of their importance, are:

1. A sincere management interest. A management interested in the day by day events and not the one that annually appears on the scene to wave the victory flag—or in the case where the record has been poor, to wave the "flag of condemnation." And by the way, it's your job to get this management interest.

2. Place and keep plant and equipment in A-1 condition and operate them safely and efficiently.

3. Place safety in the triangle with production and quality and, for heaven's sake, don't shorten the safety leg. Give it equal footing with the other two items—production and quality.

4. Supervision capable of and interested in training and directing people in the efficient and effective production of quality products—safely.

5. Communication—send information down the line as well as up the line—the little man is doing a big job and deserves to be kept informed.

6. Provide trained personnel and adequate facilities for the medical program.

7. Provide capable leadership for the safety program. There are more things too, but now a message to you gentlemen who are shouldered with the responsibility of providing capable leadership for the safety program in your respective plants:

Be men of action. Don't sit in an office, get out in the plant. Employees and their safety attitude generally test the mettle of you safety people. Your opportunity is greater than ever before! Go to it!

Have the will to succeed. If you don't believe it can be done—how can you inspire others to believe it? The will to succeed in leading your people to the threshold of

safety and happiness—and when you have succeeded in reaching the threshold, give your people a big push that will keep them forever on their way to safety and happiness.

Use common sense. And make others use it also—including top management. And what is common sense? It has been very aptly termed the knack of seeing things as they are, and doing things as they should be done. Briefly, it is just plain, good old common horse sense. It isn't bought or sold and everyone can have it or acquire it!

Be inquisitive—learn the answer. And be observant. And teach supervisors to be also. It may be the look in George's eyes or the way he mutters "Good Morning," but you know it isn't like him, something wrong. Be inquisitive—learn the answer. Nine times out of ten a little chat will bring back the twinkle in his eye and the enthusiasm in his voice and immediately he will be a happy safe George.

Guide them to safety—and be proud of it! There are various kinds of pride. Yours must be an electrifying one when day after day George leaves the plant happy and safe and your thoughts travel home with him and watch as he is greeted by the wife and the kids. Pride has made America an immense land of action, a nation of go-getters. And when you have contributed so much to the safety and happiness of George and his family, you have every reason to be proud of it! Your pride will be contagious, too, and will set everybody on fire if you use it right.

Be enthusiastic. The enthusiast provides the desired leadership because he is sure of himself, his efforts and his ideals! Your plant's successful safety program can be attributed to the enthusiasm you inspired in its people—a sparkling enthusiasm to be happy and safe.

Believe that every day is a golden opportunity. Accidents happen in an instant. Don't put off until tomorrow that which should be done today. Lost time is never found again—neither the day we lose by slacking nor the injury lost day as a result

of our dallying. Most failures are the result of delay. Get moving! Get action!

Be confident. Nothing could be more disastrous to your efforts in a safety program than a lack of self-confidence. Self-confidence is a must if any undertaking is to be successful. Talk, act and think safety with self-confidence and failure is out on its ear.

Have faith. It has been said that faith doubles ones normal powers, gives unending confidence and inspires every worthwhile activity. Certainly I can think of nothing more worthwhile than active people, happy people. And I am sure that nothing will give us happier people quicker than a supreme faith in the almighty God—Faith in ourselves and our destiny—both of these to be followed up with earnest, confident action.

Set your sights high! It has been said that only fools say it can't be done! If it's a perfect safety program you want, fix that aim vividly in your mind. Then keep everlastingly at it! Permit nothing to discourage or deter you! Live it! Sleep it! Dream it! Yes, if necessary, even eat it! Continue on and on and the satisfaction of seeing a completely safe and happy group of employees will be yours! You can have the kind of record you want if you work for it.

Be cheerful. Stay in a good humor! Be cool, courteous and collected in every situation and influence your people as you see fit. A bit of cheerfulness at the proper time will do more towards the removal of tension than any other single item. Boost your people into the safety way, never try knocking them there.

Look for opportunities. You don't have

to look very hard really. Opportunity is staring each of you in the face this very minute. How many of your managements are satisfied and content to let the progress in safety become stagnant and lie peacefully where it is today, yes, even recognizing the fact that your record for 1950 may be far and away outshine the industry's national average of 11.80. You know how management is; they always want it better; if the record is poor, management wants it good; if it's good, management wants it better, and if it's perfect, well, I'd be willing to guess that the management has Webster working on some expression that would express the thought of something better than perfection so that opportunity would stare each of you in the face.

Success is beckoning, and I'm sure you will heed the call!

The road is wide and open!—And many of the men who traveled this road and achieved the heights of success began with no other assets than alertness, willingness, and a strong determination to reach that apex in the road where their momentum and continued efforts would carry them on-and-on-and-on.

You gentlemen, are on the road! You are in a great field, it is a happy field to be in, for it helps large members of people—your friends and associates and fellow workers to attain a new level of happiness by working safely. Nothing in the world can give you a greater feeling of personal pride and happiness than to know that through your enthusiastic confident, guidance and leadership all people—rich or poor—white or black—young or old within reach of your influence have been made happier people because they are safe people.

Quality Production With Safety

By F. O. SOUGHTON

Service and Safety Supvr., Longlac Pulp & Paper Co., Ltd.,
Terrace Bay, Ont., Canada

At the outset I should like to place special emphasis on certain factors which were fundamental in the development of the safety program at Terrace Bay.

1. Our parent organization, Kimberly-Clark Corporation, has been active in the

safety business longer than most of us can recall and, therefore, was able to relate much valuable "know how."

2. During the design and construction days, safety was literally built into the Terrace Bay project.

3. We were most fortunate in having a top management which insisted upon safety not separate from, but as a part of actual operations.

And two important pre-start-up activities paid real dividends.

1. An intensive two month building-by-building safety inspection netted some 286 mechanical hazards which were dealt with promptly.

2. Mill employees who were to handle operating jobs were hired well in advance of start-up and carefully trained in operating procedures. This training included the use of individual job write-ups which incorporated the safety measures related to each job.

Confronting us in the early days of 1949 (our first calendar year of operation) were facts, which to say the least, were somewhat foreboding:

1. Estimates of from three to seven years were given by experts in the safety business as to the amount of time which would be required to develop an effective safety program in a new mill.

2. New sulphate pulp mills which had gone into operation in Ontario prior to our start-up had suffered disabling injuries at the rate of one every four or five days during the first two or three years of operation, with frequency rates well above 50.

Such negative prospects were a challenge to our ingenuity. The thought of having a LongLac employee suffering a disabling injury every four or five days haunted us and spurred us to action.

There was no time to experiment except on one point. Statistics indicated that up to 90 per cent of all industrial accidents were due to "human" not "mechanical" hazards. That being so, we firmly resolved to expend the bulk of our time and effort in this direction since it seemed logical to assume that our accident prevention program might be immediately successful if we could deal effectively with those "human" failures.

To do this we needed a basic philosophy which could be sold to everyone—to supervisor and workman alike. Since the theme, "Safety First," did not appear to have these qualifications, "Production with Safety" was adopted (the word "Quality" was added later).

To implement this philosophy it was determined that accident prevention would be a function of the line organization, stemming from the mill manager through the superintendents and foremen in the same manner as any other management function. And let me here inject a thought for anyone responsible for a safety program. If top management in your mill is not sold on safety, if top management backing leaves something to be desired, it is my considered opinion that it is your duty and responsibility to do a sound selling job in this direction. I am convinced that top management wants to do the right thing and will if properly informed.

In order to deal effectively with the varied "human" failures that cause so many of our industrial accidents we must also influence the minds of those who are our working force. And while terms applied in this field may carry such labels as creating safety consciousness or safety awareness, the techniques which have paid off with us are directly related to sound advertising principles.

But let me also state that the same dynamic effort must be incorporated in selling safety as is used in successfully selling any product. Simple reminders aren't sufficient. A single small sign at the mill entrance just won't do the trick. Something more spectacular is what people are used to in modern day advertising. Call it tinsel if you will, we did at Terrace Bay, but it was decided early the first year that we did not have enough of it. An increase in the amount used brought almost immediate results.

Before continuing with details of our present safety program it is but fitting that you should know about the results which were achieved.

Throughout 1949, the first calendar year of operations, we experienced 18 disabling injuries (an average of one every 20 days) for a frequency rate of 13.76, believed to be the safest pulp mill start-up on record on this continent.

The second year we operated, 1950, saw a sharp reduction in our accident experience. Disabling injuries were cut to 8 (an average of one every 45 days) and the frequency rate dropped to 5.91. Work days lost were reduced to 67 from the 656 of the previous

year while man hours worked increased to 1,350,000 from 1,308,000.

At the same time production increased and the quality of our product improved. The basic theme of our operations, "Quality Production with Safety" had become "A Proven Reality." During the first 9 months of 1951, to October 1st, man hours worked have exceeded a million with a disabling injury frequency rate of 1.84.

It is not enough, however, to talk only about a basic philosophy and then cite results achieved. Specific factors which have become a part of our safety program should be noted.

Let's take a look at some of the "tinsel" we spoke about, used to create that safety awareness so all important in combatting those human hazards which cause so many of our on-the-job accidents. We contend, for example, that it's very important to make some impressions on every LongLac employee at the start of each day or shift. To accomplish this we have the following:

1. *A Jumbo Billboard*—18 ft. x 32 ft. This billboard uses the 10 ft. x 12 ft. jumbo posters published monthly by the National Safety Council. It also proclaims our "Quality Production with Safety" theme and has interchangeable space for "Yesterday's Production" and "Safe Days" since the last accident.

2. *A Safety Contest Scoreboard*—7 ft. x 15 ft. This huge scoreboard shows the relative positions of 11 pulp and paper mills in an area safety contest. A 2 ft. x 3 ft. interchangeable panel on this sign gives us room for any special announcements.

3. *A Dog House*. This is a full size 3 dimensional dog-house with a cut-out dog, all perched atop a 6 foot pole. It is reserved for any LongLac Unit (there are 20 of them) which has less than 100 safe days to its credit and there is room on the side for the names of any such units.

4. *Safety Slogan Contest Board*—6 ft. x 7 ft. On this board each week is posted on a 22 in. x 28 in. card the safety slogan for the week. The board also states the amount of the current Jack Pot. Each week, \$5.00 is added to the Jack Pot and an employee's name is drawn from the Personnel Department Kardex Records. If the slogan is missed, the Jack Pot grows by \$5.00 per week. Keen interest has been maintained

in this simple contest for 2½ years with the Jack Pot reaching as high as \$35.00.

5. *Frequency Rate Comparisons*—Our yearly experience since start-up is set forth on a 4 ft. x 6 ft. panel with a brief description of what constitutes a frequency rate.

6. *"Production with Safety" Panel*—6 ft. x 8 ft. The "Quality Production with Safety" theme is repeated with "production" and "safe day" totals changed daily.

7. The impact of what has been noted so far is made before an employee punches his time card. *The Time Card* itself has imprinted on it in red, a safety slogan. (These slogans change with each change of time cards.)

8. *Safe Man Hour Thermometer*—8 ft. high. Across the top of the thermometer is the challenge "Let's Make it a Million Safe Man Hours."—(A previous objective of a half-million safe man hours was achieved during the spring and summer of 1951 when the project completed 728,000 consecutive safe man hours before a disabling injury broke a run of 192 safe days.)

9. *Unit Scoreboard*—3 ft. x 9 ft. keeps the score of disabling injuries during the current year of all 20 units into which the project is divided.

10. *Individual Unit Scoreboards*—2 ft. x 3 ft. These scoreboards have a green cross for safety at the top which contains the "Production with Safety" theme. Each board is supplied with interchangeable numbers and there is room on the board for the best previous safe day record and the current safe day total. A small blackboard section 10 in. x 20 in. provides space for any brief message, safety or otherwise, and an 11 in. x 14 in. soft board panel projects at the bottom on which a single safety poster or minutes of safety meetings can be posted.

11. *Giant Safety Slogan Panels*—3 ft. x 12 ft. Six of these double sided safety slogan panels, made up of light framing and sign cotton are routed through six strategic locations in the mill at monthly intervals. Each month a new panel is started through the circuit and the panel used for six months in all six locations is retired.

12. *Bulletin Boards*—A regular bulletin board service, under glass, is maintained in six mill and office locations and National

Safety Council and other safety posters are utilized in the safety sections of these boards.

Quite apart from signs and posters we also make use of the following:

1. *Daily Letter* contains quality and production information, special announcements and a safety message. This is one of the most important factors in the program since it is a daily reminder to each man in the line organization that safety is very much on the agenda. And this daily letter provides a regular communication channel for important items which would otherwise require special memos. It takes time to get out this daily letter but it is time well spent.

2. *"Quality Production with Safety" sheet*, distributed weekly to all employees. This single 8½ in. x 14 in. sheet was originated by the accident prevention committee. It is devoted to production and safety matters and is enlivened by two or three good jokes. Focusing attention on the basic theme of operation which is printed in three colors across the top of the sheet, this means of communicating with every employee creates many valuable impressions.

3. *Terrace Bay News*, a weekly mimeographed newspaper distributed to all Terrace Bay residents. This medium is utilized to carry safety messages along with regular news items.

4. *Co-operation*, a bi-monthly publication of our parent organization, Kimberly-Clark Corp., distributed to all corporation employees. From a safety standpoint, we make particular use of this publication in recording the achievements registered by our safety efforts. Much of this record is kept pictorially as this is our only medium, at present, for obtaining a wide distribution of pictures of safety activities and accomplishments.

By elaborating as I have on the various factors of our program covered to this point I have one purpose in mind; to illustrate the extent to which we go, apart from our accident prevention committees, indoctrination practices and other aspects of our program to sell safety in a general way to everybody and keep them sold by repeated reminders. What works specifically in one safety program does not necessarily prove equally effective in another situation and so I would caution against any attempt to just

copy what someone else is doing. However, where a sound principle works well in someone's safety program, it will probably do as good a job if given a chance elsewhere. As a principle which you would do well to copy, may I simply state that I don't believe you can overdo the variety of appeals which you use to sell safety, so long as those appeals are geared to the basic philosophy underlying your program. In other words, speaking of appeals, the more the merrier.

As for committees in our safety program we have three types.

1. *Terrace Bay Accident Prevention Committee*. This committee is responsible directly to the mill manager who acts as its general chairman. The committee is also made up of all mill superintendents (who may invite to the meetings a foreman of their choice); local union officials (president, vice-president and secretary); the chairman of each departmental safety committee (who may be either salary or hourly rated men); the plant nurse and the safety supervisor who acts as secretary.

This committee oversees all safety activities, reviews statistical reports, determines mill wide safe practices when necessary, institutes stunts and contest and considers matters referred to it by the various departmental safety committees.

2. *Departmental Safety Committees*. Each department has a departmental safety committee which is responsible to the superintendent of that department.

These committees, whose composition is determined by the superintendent concerned, conduct regular inspections of their respective departments, consider items of safety brought to committee members by employees of the department, help to plan general meetings of all members of the department and in many instances decide subjects for such meetings.

3. *Special Committees or Sub-committees*. These committees may be set up by the accident prevention committee or any departmental safety committee and they may cover such items as: special events, contests, good housekeeping inspections, or they may be set up to study a particular safety problem.

It is important that I should emphasize that all committees which are in any way

a part of our accident prevention program are responsible to either a superintendent or the mill manager. This keeps the responsibility for safety in the hands of the line organization and therefore eliminates any possibility of divided authority.

Certain other measures also have an important bearing on our accident prevention program.

Accident and Hazard Investigations. All accidents involving disabling injuries, many accidents involving minor injuries and particular hazards which cannot be readily eliminated are all subject to formal investigation.

Statistics. Statistics "with meat on them" prove of real value as a "measuring stick" in checking on progress and can be made interesting if some thought is given to the subject.

First Aid. Speaking from experience we know that:

1. A plant nurse with the "right attitude" can be of invaluable assistance in promoting health and safety quite apart from rendering important first aid service.

2. Employees trained in recognized first aid courses are also a real asset to a safety program.

Safety Contests. While the merits of safety contests may be seriously debated, we believe they serve a very useful purpose. People like competitions, that is why sports are so popular. For this reason, we operate two mill-wide contests:

1. A slogan contest, referred to previously; and 2. A contest wherein each of our 20 mill units competes against its own ability to work safely for 50 day periods at the end of which the unit receives prize money (if earned) on a per capita basis, which may be disposed of in any manner decided by members of the unit, except individual distribution of the cash. A contest operated in this manner eliminates, fairly well, the criticism often heard when inter-department contests are run that some mill units are more hazardous than others. (A copy of rules governing this type of contest will be gladly sent to anyone on request.)

We also compete in the following contests:

1. A two-mill contest with Spruce Falls Power and Paper Co., Kapuskasing, Ontario.

2. An eleven-mill contest involving all pulp and paper mills in Northwestern Ontario.

3. An Ontario-wide contest involving 22 Class "A" pulp and paper mills.

4. The "Safest Mill in Canada" contest for pulp and paper mills.

5. The National Safety Council Paper Industry Contest.

Maintenance Shutdown Meetings. Whenever a major maintenance shutdown is scheduled, it is immediately preceded by a mass meeting of everyone who will be doing shutdown work. Apart from dealing with particular hazards, these meetings place a great deal of emphasis on the elimination of "chance taking" and "hurry." We feel that such meetings payoff in better workmanship as well as fewer mishaps to machinery, tools, and most important of all, men.

Good Housekeeping. Much effort is expended by inspection committees on a mill-wide and departmental basis in maintaining a high level of good housekeeping throughout the entire operation. A low injury frequency rate and good housekeeping go hand in hand.

But I would caution against any attempt to merely inspect safety into a mill. Safety can no more be inspected into a mill than can quality. Just as controlled conditions are necessary in producing a quality product so also are controls necessary to insure safety. Inspections simply point out where controls have faltered or failed. If this fact is clearly recognized when inspections are conducted, they will prove of real value for we then deal with "causes" and not just note the "effects."

Safety Organizations. I would urge safety supervisors to get into safety organizations with a will to help in every possible way, bearing in mind that if what you have in stock and trade doesn't meet the competition at the outset, you'll soon find a way to see that it does if you are really interested in doing your job. As you find more of the answers, your own mill will benefit directly and your contribution to the safety movement will be just that much more effective. And don't be afraid to step in and do a job where you see a need.

Public Relations. If you have a public relations department at your mill, use it. If you are on your own, get next to the editors

or reporters of local and area newspapers and magazines. Any reference to your safety efforts will add prestige to your program and create favorable impressions on your employees as well as the general public. At Terrace Bay, we are very grateful for the support given our safety program by a number of newspapers and magazines.

Reference to one very important phase of our safety program has been purposely left to the last. It is the personal approach to the employee from the time he joins our ranks.

At the very outset, as soon as he is on the payroll and before commencing work, the subject of accident prevention is personally covered with him by the Safety Supervisor. Time consumed by this phase of our indoctrination program varies from 15 to 40 minutes depending upon whether an individual or a group of up to 8 men is involved. The employee is told the story of LongLac's accident prevention program and the success which has been achieved. Reference is made to the Union Agreement booklet, a copy of which is given to each employee. This booklet contains all the mill rules governing every phase of our operation and penalties for violations of these rules are clearly stated. Rules related to safety are included. For example, violating "Do not Start Tag" regulations is listed as "a reason considered sufficient for immediate discharge."

Some may disagree with the principle of penalties tied to compulsory rules. We are convinced, however, that clean cut rules set forth in writing, with penalties that are fair to all concerned serve a very useful purpose in keeping that small minority in line who would probably never stay within the law even though exposed to all the appeals to which normal people respond. In other words, we apply the same principles which

are effective in every day law enforcement.

In addition to general information which also includes reference to the first aid room, necessity for reporting all injuries promptly, safety shoe program, prescription goggle program, smoking areas, prompt action necessary if in contact with chemicals and the extent to which the company has gone to provide a safe place to work, specific reference is made to the department where the new employee is scheduled to work. If there are general hazards in that department they are noted; but specific job instructions are left up to the foreman and the new employee is so informed.

We also try to get across the thought that we have some idea of "that strange feeling" which even the most seasoned workman has when he starts a new job. And in parting, we stress the fact at LongLac "Safety Is Everybody's Business" and that our safety program will only continue to be successful as each person takes a personal responsibility for his own safety and the safety of his fellow workmen.

As has been indicated, individual job instruction is the responsibility of the foreman, and to maintain uniformity and assure that nothing will be overlooked, individual job write-ups are used during this training process. These job write-ups, which contain safety measures related to the job, are reviewed yearly by foremen and the workmen concerned and changes made, subject to management approval, often relate to accident prevention. Where it is not possible to use the job write-up approach, a foreman is expected to take the time to assure himself that the men working for him know the score. Sound advice in this regard is very ably set forth in a little booklet, "How to Sell Safety" published by The Bureau of National Affairs, Inc., Washington, D. C.

Techniques of Accident Investigation and Effective Use of the Results

By ROBERT W. GRAY

Safety Director, Union Bag & Paper Corp., Savannah, Ga.

It is my purpose to present briefly a simple technique which we have used in the Union Bag & Paper Corp. to present the

results of accident investigation to the supervisors whose responsibility it is to take the indicated corrective action. It has been our

experience that when good supervisors are in possession of full facts, they can and will correct any unsatisfactory condition relative to production including that essential part of production, the conservation of the most indispensable tools they have, which is their man power. We have been using this technique for a number of years and believe it is the most effective means of presenting full facts to the supervisors. The technique is simple and inexpensive. I want to emphasize the fact in the beginning that it can be effectively carried out by any good safety man or men, and as you will see, professional photographers, etc., are not necessary. The pictures which I am going to show you were made by a member of our safety staff, and a professional photographer is used only in the preparation of the glass slides.

I think it will add to the effectiveness of the presentation if you gentlemen will now consider yourselves as operating supervisors attending a meeting conducted by your division head. I will ask you to step out of the character at a point or two during the presentation.

Slide No. I. This picture is typical of many in our accident files dealing with an accident caused by a dangerous practice. The accident occurred at the winder of a triplex machine in our paper processing department. The injured man is a winder helper and is shown holding a linoleum knife in the slit between two rolls of paper being wound up on the winder. The rolls are slit as they go through the winder. Occasionally, the sheet will slightly lap after it is slit resulting in rolls being hard to separate. As you see, he was holding the knife with his right hand and supporting it underneath with his left hand with the back of the knife blade resting at the first joint of his index finger. The knife apparently cut through the lapped paper and became wedged. The paper roll turns clockwise and the roller under his hand turns counter clockwise with the result that his knife was immediately jammed against the bottom and the end of his finger was cut off by the back of the knife blade. Fortunately, his hand did not enter the nip between the rollers.

Slide No. II. This man received a severe crushing laceration of his right thumb, extensive damage to skin and tissues between first finger and thumb. He lost 14 days from work. His accident happened this way. He is attempting to adjust the position of

the reel on the stand by using the ratchet wrench in the manner illustrated. The reel is turning counter clockwise. The ratchet was known to be defective. He is attempting to mesh the cogs on the defective ratchet with pressure from his left hand. As he applies force with his right hand the cogs slip and his right hand is caught between the end of the ratchet and the revolving roll. The key points here are the admitted fact that this worker and others on different shifts knew this tool was defective and it was not reported.

Slide No. III. This is a particularly good picture, however, you will please remember that I told you in the beginning that we are not professional photographers and we are using an inexpensive camera. This bulldozer operator was pushing bark off a railroad track leading into the wood yard. This stick of wood became wedged between the caterpillar tread and the frame of the bulldozer. The operator, leaving the machine in gear with the clutch disengaged, of course, left his seat and stepped out on the caterpillar tread to remove the piece of wood as shown. As nearly as we can determine, vibration of the motor caused the clutch to engage and as the machine started forward, his foot and leg were caught between the caterpillar tread and the arm which supports the bulldozer blade. The result was a crushing injury to his left knee and foot with three bones fractured in his foot. He lost 53 days from work.

Slide No. IV. Here is a spout man cleaning ashes out of a clogged hopper on the back side of a recovery unit using a high pressure water hose to dissolve the accumulation of ashes and smelt and punching the accumulation in the hopper with a steel rod. He is using the hose because the pump which operates this water line is out of order. While he was performing the operation as shown, there was a smelt explosion in the hopper. He was painfully burned about the face and neck and lost 22 days from work. Proper goggles saved his eyesight. The key points here are these two things: 1. The wash out water line is below the access door. 2. The access door is at face level which add up to unsafe working conditions.

Now, to correct this, the following things were done. A portable platform was provided on which the operator could stand with the access door about level with his knees. The water line was moved to a position

above the access door, and an observation door was installed in the hopper above the access door. All as shown in the next slide. But in spite of these corrective measures it happened again.

Slide No. V. As I told you, the wash out line has been changed from its position in the previous picture below the access door to this position above the access door. Six months later in spite of these changed conditions it happened again. The worker ignored the access door and used the observation door duplicating the conditions which prevailed in the first accident. Now, gentlemen, forget for a moment your role as supervisors and let me point out to you that it was embarrassing to the supervisor when this second accident occurred and this picture was projected for the second time.

Slide No. VI. The problem of getting guards on exposed moving equipment that "can't be guarded" is highlighted in this and the following slide. Briefly—an adjuster lost four fingers on his right hand when it was caught under the ironing rolls while he was snatching bags out of the machine as it was being started up. On this type bag machine, the tube comes over the drum and a gripper catches the end of the bag and pulls it up under the ironing rolls. Because the gripper does not do this operation perfectly at slow speeds, the operating department had always contended it was impossible to guard this section of the machine as this would make it impossible for the operator to remove these bags by hand, and the bags would then wrap the drum jamming the machine. The man's hand was carried up under the draw rolls, under the bar which holds the forming brass, and into the creaser blade which cut off the four fingers. The seriousness of this accident and the presentation of this picture graphically illustrating the danger resulted in having these machines guarded is illustrated in the next slide.

Slide No. VII. Here you see the danger area fully guarded and the arrow in this case points to a switch which is integrated with the guard and operates so as to stop the machine if the guard is raised as much as $\frac{1}{2}$ "

Slide No. VIII. This picture shows the reenactment of an accident that happened in the tabulating room. A 6', 190 lb., robust, young man stooped over to pick up two trays of tabulating cards off the floor, but he

never completely straightened up. He experienced severe pain, was removed on a stretcher, and the diagnosis was "hernia."

Slide No. IX. This picture was posed by the injured man himself. Inside the circle, you will note a rag in his right hand and a little white patch. The little white patch is a bandage on the end of his index finger at a point where the first joint was cut off when the rag was caught between the gears and his finger mashed between a gear and the frame of the machine. This man was a foreman and was demonstrating good housekeeping techniques by sliding back the guards which are suspended on the pipe shown across the man's back and cleaning the machine while it was in operation.

Slide No. X. The error of assuming common sense on the part of our workers and an example of the extent such workers need detailed safety instructions is highlighted in this picture of this truck operator about to be "guillotined."

There were two people concerned in this accident and because both of them are electric truck operators, it will be necessary, in the interest of clarity, to identify them by name. Rushing is the name of the man shown in this picture. Masters is the name of a worker at the bottom level of the elevator shaft. Rushing had loaded the elevator with two skids of paper, had backed his truck off the elevator and stopped it just clear of the gate. He came around to the gate and pulled it down with a rope tied to the gate for this purpose.

Masters was waiting for the elevator on the first floor. When Rushing closed the gate, the elevator descended a distance of about 12-14 inches and stopped. Masters was controlling the elevator with the bottom control switch on the first floor. The elevator, as you know, is equipped with contacts on the gates which break the circuit when gates are not in closed position and make the elevator inoperative.

Masters called to Rushing to close the top gate, thinking this was the cause of the elevator stopping. Rushing stood on the platform of the truck, placed his hands on the top of the gate and leaned his head over the top of the gate to shove it down and to call down the shaftway to Masters that his gate was closed.

The elevator started down and the top of the cab caught the back of Rushing's head,

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mashing it against the top of the gate on which his neck rested. Rushing called to Masters to stop the elevator. Rushing's calls brought his foreman to the elevator and he found Rushing with his neck mashed between the gate and the cab roof with his feet dangling in the air above the platform of the truck.

The somewhat flexible gate had been strained to the point where the contacts between the gate and the electrical circuit (interlocks) were not making proper fit and it is not definitely known whether the circuit was broken in this manner or whether Masters released the "down" button to stop the elevator.

Rushing was released from the trap, taken to the first aid hospital, and immediately to the doctor who diagnosed his injury as "contusion of the neck and damage to the larynx." Fortunately, no vertebrae were broken and a very sore neck and a hoarse tone of voice which lasted for a week were the most serious affects of the accident.

Comments: You will remember that six months ago the safety department made an inspection of all elevators which showed shaftway gate protection to be standard at the level at which the accident occurred. A reinspection of the shaftway gate protection made immediately after the accident shows that this protection is still adequate.

The Cause: As determined by the investigating group it was extreme carelessness and complete disregard for safety devices. Since all equipment involved in this accident meets the requirements of the safety code, no recommendation was made regarding physical hazards.

Since the existence of standard protective devices appears not to be sufficient protection against accident to extremely careless individuals, the investigating committee recommends that supervision caution all personnel regarding this unsafe act.

Injured was severely reprimanded by the department superintendent and returned to work on probation.

Paper Machine Fires

By G. W. BRAHMST

Eng., Factory Mutual Engineering Div., Associated Factory Mutual Fire Insurance Co., Boston, Mass.

Early this year a fire originated in a paper machine in a midwestern paper plant. The fire spread rapidly over the machine, into the unsprinklered hood and ventilating stacks above. All combustible material on the entire drying section of the machine, including the felts, was burned. Two hundred bearings were damaged and had to be repoured. Heat cracked the cement asbestos board hood and damaged ventilating stacks. Auxiliary equipment such as motors, wiring etc. were also damaged. Fifty-seven sprinkler heads at the roof level opened due to the heat of the fire. This fire is believed to have been caused by a hot bearing, probably due to the lack of lubrication, which ignited the paper dust and fibers and oil around the bearing. The estimated amount of damage including loss of use of the machine was \$50,000 and this was considered on the low side.

Perhaps many of you are wondering if

you could have such a loss in your plants, some maybe wondering how fires in paper machines can be prevented and, if they do occur, how the damage and down time can be kept at a minimum.

Sometime ago, at another conference, one of the speakers said, in referring to statistics, that they are more efficient than any sleeping pills. I heartily agree with that statement. Statistics are quite essential and the basis for determining preventative measures. The following are from Factory Mutual records covering about 200 properties having paper machines.

From 1928 to 1949 there have been 395 losses from fires involving paper machines in Factory Mutual Insured plants. The total amount of loss resulting from these fires was \$843,000 including loss of production which was approximately \$270,000. The amount of loss of production would no doubt have been much higher had all of the plants

carried Use and Occupancy insurance. This form of insurance was not carried by many plants prior to about 10 years ago.

During 1950 there were 33 losses involving paper machines. In the nine months of 1951 the record is much better as far as the number of fires are concerned, for there have been only ten machine fires with an estimated loss of approximately \$18,000 property damage and \$12,000 Use & Occupancy but the amount of loss for these ten fires about equals that for the 33 fires in 1950. This is due partly to the higher labor and material costs, and to the fact that for several of the fires the amount of loss has been estimated. As a rule estimates are higher than the actual loss.

In these days of astronomical figures, these losses may seem small but to the individual plant operator any loss is of importance. The amount of property damage, even increased by Use & Occupancy, as paid in dollars does not always show the true picture.

Let us see what causes these losses. Again we find from our records after a study of 352 fires, that the following were reported by our fieldmen to be causes of these fires.

Fire Causes

Hot bearings	39%
Electrical	18%
Friction	17%
Cutting and welding.....	7%
Miscellaneous sparks	4%
Static sparks	3%
Hot steam pipes.....	2%
Smoking	1%
Unknown	7%

Hot bearings cause four out of every ten fires and occur principally on the older type of paper machine having grease or oil lubricated plain type bearings. Because of the inaccessibility of the bearings on the back side while the machine is operating, most of the fires occur on this side of the machine. The presence of grease or oil-covered open gears and oily fibers, paper dust, pieces of paper, rags and rope add fuel and cause a hot fire once ignition occurs.

We have no record of a fire originating from a hot bearing in the newer type machines having enclosed gears, anti-friction type bearings and with oil supplied from a central lubricating system.

The electrical fires, second in number, are caused by failure to maintain the electrical equipment, particularly the motors, in good repair. Motor bearings, like many others, are frequently over-lubricated resulting in oil getting on the windings and power wires. This breaks down the insulation, and also helps dust and fibers to accumulate in the motor. If not removed periodically overheating occurs, followed by failure of the insulation or a short circuit, and then a fire.

Heat generated by friction of paper chokes between rolls, at belts, gears, clutches and moving parts other than bearings caused the third largest number of losses.

Cutting and welding operations while making repairs or alterations to equipment has been the fourth major cause of fires. Most of such fires are the result of carelessness on the part of both the machine operator and the welders and are due principally to not taking the necessary precautions to clean up the machine and remove or protect all combustible material in the vicinity of the welding or cutting operations or, better yet, where possible to move the parts to be welded to a safe location.

Now that we have some idea of the cause of these fires maybe a few actual fire losses might give a better picture of how the fires occur and the damage is done.

We have already cited one example of a hot bearing fire at the start of this paper. Here are a few others.

At one plant a hot bearing in the machine room basement caused a fire which spread through the belt and other openings into the first story. Here the fire flashed over the dust and fiber deposits, oily gears and the paper on the machine. Sprinklers in the vicinity of the origin of the fire were found, after the fire to be obstructed with scale, pebbles and silt. The water supply was poor permitting the spread of the fire which eventually destroyed the entire machine room and adjacent beater building.

At another plant two fires originated at hot bearings on the back side of the machine. An employee observed one of the fires start but before he could obtain extinguishers it had spread over the machine. The hood over the machine was unsprinklered. One fire damaged the lower felt and the other damaged the upper felt. The machine was shut down for 14 hours following the fire and most of you realize what

a shut down of such duration can do to your production schedule.

Early this year an employee noticed a hot bearing on a paper machine and tried to cool it by discharging a carbon tetrachloride extinguisher on it. He then proceeded to oil the bearing. When the oil touched the hot bearing it burst into flames which spread over the machine and into the economizer. The fire damaged the building roof and two machine felts.

Fire started at a hot bearing on a newsprint machine, spread over the machine and into an unsprinklered non-combustible hood and economizers. It damaged three or four economizers and the heat exchanger units.

The following are examples of fires from other causes.

A steel shaft on a felt tightener roll broke causing sparks which ignited paper dust and fibers on the machine. The resulting fire was extinguished by sprinklers and hand extinguishers.

While employees were changing a felt an unprotected light bulb broke and the hot filaments ignited the dust and fibers on the machine. The fire flashed over the front of the machine and was extinguished by two sprinklers, small hose and hand equipment. A little later a smoldering fire was found at the back side of the machine and was quickly extinguished.

To protect a bearing in the basement from water leaking from above, a piece of felt 12 x 16 x $\frac{3}{8}$ in. had been laid over the bearing. This piece of felt apparently was drawn into the machine and became lodged between a roll hub and the bearing. The friction created ignited the felt and fire spread to the loose broke and the paper in the dryer and on up into the first story. After the fire pieces of the felt were found tightly wedged in place. An examination of the bearing gave no indication of improper lubrication.

An operator in one plant lighted a match to look into the hand hole of a cylinder. The flame ignited the dust and fibers on the machine and fire flashed over the side of the machine, into the hood and economizer. Ten sprinklers opened over the bearings, two in the economizer and 28 at the building roof. The damage was confined to the economizer house floor, which was torn up to fight the fire, electric wiring, paint on the machine,

two asbestos felts, the carrier rope and asbestos board hood.

Repairs were being made to a paper machine room and some steel beams were being installed with the aid of portable cutting and welding equipment. A spark is believed to have been drawn in a nearby fan intake and it ignited the deposit of fibers and dust on the interior of the duct. There were no clean out openings in the duct and following the fire an inspection revealed a one-half inch thick oily dust and fiber deposit on the interior of the duct. The damage was confined principally to the paper stock.

At another plant making paper board a fire caused by the ignition of dust and fibers by a welding spark spread to an unsprinklered plenum chamber of a hot air recovery system and damaged the copper tubes of the heater and steel deck roof. Precautions had been taken to plug existing cracks and to station workmen with extinguishers nearby, but in spite of the precautions a spark ignited dust and fibers on a building column and spread across the roof into the plenum chamber.

At a midwestern plant employees were cleaning the hood over a paper machine and had stopped work for lunch. On returning they discovered the entire hood on fire. Flames had spread to the machine, ducts, blower and economizer. The fire, apparently started by a spark made by the brushes on a portable vacuum cleaner, smoldered and finally burst into flames. Forty sprinkler heads opened in the first story and ten in the basement.

Several fires have started at calenders and flashed back to the machines. One such fire started following a break while paper was being fed by hand into the first calender stack which had just been cleaned with kerosene. The fire started on the machine side of the stock and spread to the machine and the broke in the pit beneath the machine. Nine sprinklers at the roof opened and beat down the fire which was extinguished by means of three small hose lines.

A good example of poor housekeeping and over oiling is shown in a fire that originated in the basement and flashed up the side of the machine and into the hood. The fieldman investigating the fire reported as follows: Housekeeping is substandard with excessive oil and grease spillages and run over

(excess lubrication) on the side of machines, under floor slab, and on pipes, motors, shafting, etc. in the basement. Numerous oil soaked wiping cloths are spread about, and broke accumulation on pipes, etc. becomes oil soaked.

The fire was believed to have been caused by the oil soaked broke in contact with a 150 lb. steam line.

I have tried to show you that fires occur in machines from many causes most of which can be prevented. These are actual case fires with no spectacular additions for the benefit of this paper. Maybe some of them occurred in the plants of some of you sitting here.

What can be done to prevent these fires and to reduce the amount of damage done by them? First let us consider what can be done to prevent fires. Without question prevention of paper machine fires is largely a matter of maintenance and good housekeeping.

Most plants today have a good maintenance program which if carried out as intended would greatly reduce the possibility of a fire. However, shortage of help due to the desire on management's part to cut down operating expenses and the difficulty of getting reliable, interested help has reduced the effectiveness of such a program.

Nevertheless good maintenance is essential and machines must not be permitted to wear to the point where they can create a hazard such as in one plant where sufficient end play was permitted to develop in the bearings to permit the drums to strike the frame and cause sparks which ignited the dust and fibers on the machine.

Good maintenance requires checking all bearings on the machine, drive units and auxiliaries such as pumps and fans, checking the drums, rollers and felts for alignment. It means the adopting of a lubricating program under the direction of a qualified supervisor. Those of you who purchase your lubrication supplies from one of the large oil companies should, if you have not already done so, have one of the oil company's lubrication engineers familiar with paper mill operations make a study of your needs and give you a list of the recommended lubricants for each machine. You should properly train your mechanics as to the right type and amount of lubricant to use.

As you have often heard, to over lubri-

cate can be as bad as to under lubricate. It is wasteful, costly and in electrical equipment excess oil has a disintegrating effect on most electrical insulation resulting in short circuits or fires. Over lubrication causes an oil film to form on the machine frame where it collects fibers and dust which can eventually clog oil passages, cause overheating and by capillary attraction drain the oil away from the bearing.

Next to good maintenance is good housekeeping. This involves keeping everything in its proper place and keeping the buildings and machinery clean. Housekeeping is one of those necessary overhead items which can easily be seen on the cost accounting books but from which the benefits are hard to determine in dollars and cents. It does show up however in the quality of the product and in employee morale. It is quite unlikely that one will find a dirty, poorly kept plant turning out a top quality product.

To maintain good housekeeping it is necessary to shut down the machine periodically for cleaning and inspection. When the production schedules are heavy and the sales department is calling for more and more paper many plants skip the maintenance shutdown until it is necessary to shut down the machine because of trouble, a breakdown or a fire. It would be much better to shut the machine down at regular specified periods for cleaning and servicing.

In the past fires in economizers were quite common because of the rapid build-up of dust and fibers and the difficulty of cleaning the units. Due to improvements in design and the fact that most present day paper mills do not have economizers, there have been few fires in this equipment.

Paper machine fires can be prevented or reduced in number and the extent of damage held to a minimum by the following precautions:

1. Install automatic sprinklers in hoods, ducts, economizers, where used, and over the drive gears of the older type machines. Records show that most paper machine fires originate at the back side of the machine where oil or grease soaked paper dust and fibers accumulate and cannot be removed when the machine is operating. Sparks from a machine fire usually are carried into the hood, ducts and economizer where they ignite the dust or fibers present. Sprinklers in these areas extinguish the fire or control

its spread. The water discharged from the sprinkler heads keeps the ducts, fans etc. cool, thus preventing structural damage.

Fires in machines under hoods equipped with sprinklers cause less damage and involve a shorter shut down period. The average loss per fire where sprinklers are lacking or are incomplete amounts to \$4,380 and where sprinklers are complete it amounts to \$557. Some operators fear that the sprinklers may open prematurely or that they will cause condensate to drip on the paper. Leakages reported over paper machines have been less than two a year. The machine felts suffered the greatest damage in these leakages.

Condensation on sprinkler piping under hoods has been given by many machine operators as an objection to the installation of sprinklers. These claims are made without any foundation as an investigation of this at a number of plants having sprinklers showed that no condensation took place. They are apparently based on experiences with piping having water flowing through it whereas a sprinkler system has no circulation and frequently the branch line piping contains only entrapped air. Where there is a fear of condensation the piping can be insulated or located outside the hood with only the heads projecting through to the inside.

Some believe that the hot metal surfaces such as dryer drums and particularly the Yankee dryers having the large diameter, heavy-wall roll will be damaged by the discharge from sprinklers. For fighting fires in such dryers we recommend the installation of sprinklers and the use of hose lines equipped with spray type nozzles. We do not recommend using a solid hose stream on the hot dryer rolls. To date on regular paper machines we have no record of any damage being done to a hot dryer roll by water discharged by a sprinkler head.

Several years ago the National Safety Council made a study of this subject and published their finds in Engineering Study Pulp and Paper No. 3 "Report on the Use of Sprinklers under Dryer Hood." No doubt most of you present are familiar with that report. The tentative conclusions in the report were that the likelihood of dryer rolls fracturing, at least immediately upon operation of sprinklers appeared to be remote but that there was a possibility of damage and subsequent failure.

2. To supplement sprinkler protection, ample small hose connections should be installed in the vicinity of the machine. Sufficient 1½ in. diameter cotton rubber lined hose in not over 50 foot lengths and equipped with a shut off type combination spray and solid stream nozzle should be provided at each connection so that all parts of the machine room can be reached by one or more streams.

3. Provide adequate portable type extinguishers in readily accessible locations so that in the event of a fire the employees can quickly obtain equipment for combatting it. Portable extinguishers should be of the proper type for the hazard. Where good pressure is available garden type hose and nozzle have proved to be effective. It is easily handled by one man and therefore can be quickly brought into action by an operator or attendant when a fire is first discovered.

4. If not already in use, institute a regularly scheduled program servicing and clean up period for each machine. The time interval between periods will vary with the type of paper or pulp being run in the machine. Where short fiber material is being run or a soft paper is being made frequent cleaning will be necessary.

5. Where possible modern lubricating systems should be installed on the machine bearings. Where manual lubrication is used the employee lubricating the machine should be instructed as to the correct type oil to use and the amount to supply to each bearing. The effect of over oiling should be pointed out.

6. Train all employees in the machine room as a fire fighting crew. Assign to each certain duties to perform in case of fire so that all efforts can be utilized to the utmost to keep the fire from spreading and to quickly extinguish it. All employees should be fully trained in the use of first aid extinguishing methods as effective application can, as has been frequently shown, quickly extinguish a fire with little or no damage.

Frequently in plants we find that the first and second shifts are so trained but that the third shift has had little or no training and is without supervision comparable to that on the other shifts. Therefore this shift is not capable to handle such an emer-

gency as a fire and greater damage results.

7. Establish a permit system for any welding operations to be done in the plant. The work to be welded should be inspected by the foreman or delegated responsible person to determine if it can be taken to a safe location and if not, the area should be inspected and combustible material removed or protected and all paper dust and fibers removed before the permit is issued. While the work is being done and for at least one hour after the work has been completed the area should be patrolled. Particular care

should be taken when outside contractors are performing the work.

In closing I have tried to point out the major causes of paper machine fires based on actual experience records. May I suggest that when you return to your plant you do with the thought in mind that you will make an actual inspection of your machine rooms and machines to eliminate any possible sources of fire which you may have overlooked. As you well know a shut down of a machine means a loss of production which a plant operating at capacity cannot make up.

Operation Safety

By HOYT H. WHEELAND

Supt., No. 2 Mill, The Mead Corp., Chillicothe, Ohio

An analysis of the lost time injuries suffered in our plant in two years (1949 & 1950), revealed that only two could possibly be construed as resulting from unsafe conditions and the rest of them were the result of unsafe practices. It is not necessary to establish a theory. Here we have factual information that the man on the job and his immediate supervisor hold the key to the success of any safety program. These people must contribute their skills if we are to succeed. As an operating group, we do not profess to have the knowledge necessary to set up a broad and efficient accident prevention program. However, we have had the benefit of certain experiences and these experiences have contributed to the development of an operating philosophy of safety.

I would like to outline this philosophy.

First, we believe that every man is a safety director. He should direct himself and his co-workers to recognize hazards and devise safe working conditions and safe practices.

Why then, do we need an official safety director? We need him because he is a specialist who can provide a very special service in helping us toward the solution of our problem in safety. We like to think of the safety department as a service, or human engineering department, capable of supplying technical assistance to the operating groups. We don't believe a safety di-

rector can function to our advantage if he has to be an enforcement officer. He is entitled to a certain professional status.

Secondly, there is the matter of responsibility. Who is going to take the responsibility for an injury if the plant is over-run with safety men? We believe that job safety is a moral responsibility. This is the simple approach. You can't divide a moral responsibility. It starts at the top and goes down. The plant manager, the plant safety director, the superintendent, the assistant superintendent, the foreman, the man on the job, the man who is injured, all are morally responsible. This covers a lot of territory. But we do know that when an injury occurs, there are a lot of people asking questions such as:

"Why didn't I see that before? "Why did I fail to caution that man?" "What can I do to prevent a repetition?"

Thirdly, we favor the positive approach. It's fairly simple to be negative. Nearly anyone can tell us how not to do a job safely. The word "don't" is certainly over-worked in most safety rules. It takes a lot of thinking about a job to tell another person the right way, to show him the right way, the safe way. This can best be illustrated by examining some of the safe practices which have been developed and submitted by the man on the job. These are only examples and we will limit them to a few from the beaters and paper machines

and their related operations. They do not appear in organized form because they were selected at random. Please note that there is not one single negative statement in the lot, that safety can be given a positive aspect!

Beaters: Keep an orderly work place. Be sure no one is working on beater before starting. When greasing agitators or wiping up, stop motors and tag switches. Check with machine tender before starting stock pump. Wait until ready to furnish before cutting wires on bales. Beater drive must be stopped and tagged before climbing on beater to make repair or cleanup. When lifting, have enough help.

Paper Machines: Stay clear of suspended loads, keep both hands on crane controls. Inspect roll wagons everyday for loose nuts or missing cotter keys. Inspect rings, pins and chain on winder for excessive wear. Goggles must be used when handling acid. Stay clear of rolls being unloaded from winder.

Nip guard must be in place and all hands clear before starting winder. Keep hose clear of screen cylinders when washing up. Check back side before starting dryers, then "inch" at start. Hold hose at least 6" from nip when blowing water out of smoothing press. Stop dryers to remove blades or holders. Close fist, with thumb in, when threading calender. Post a guard at starting control when dryers are stopped to clean wrap off felt roll. Tag starting control when working on a section that has been stopped.

Please bear in mind that these practices are only typical. We certainly recognize there is no such thing as a complete analysis of all hazards, that hazards are ever present and to effectively cope with them it is necessary to develop a very special state of mind in the people on the job.

By way of illustrating this point, I would like to cover the high spots of an injury that occurred in 1949. The man involved had been employed for nine years and worked as a beater dropper for four of these years and was, by all known standards, a safe worker. He was an excellent workman, always on top of the job, alert, and had a good safety record. He contributed much to the efficient operation of the department. The situation was this:

Time: Early part of night shift; almost lunch time.

Place: Beater Room.

Action: As a part of his routine, this man was wiping off pulper equipment and all but a small area had been covered. He was making a concerted effort to complete the assignment before lunch time. The washer was in operation at this time, but in another five minutes it could be stopped and raised. It would then remain idle for a minimum of forty-five minutes. In some unexplainable manner, the wiping rag became entangled in the driving gear of the washer, drawing the man's right hand into the gear nip. His hand was badly mangled and he suffered the loss of three fingers and one joint of the thumb.

Now this is only a typical example of how, in few seconds of time, a man with an excellent record must bear the pain of injury, face many days of treatment and recovery and the problems of rehabilitation and adaption to a physical handicap.

The obvious cause of this injury can be classified as a failure to observe an accepted safe practice; i.e., stopping the motor and tagging before wiping up. The man had been instructed and was considered a safe worker. But let us take a second look. Could it be that in this case there were other influences or pressures at work on his mental state? I do not pretend to any knowledge of psychology; we can leave that to the experts; but we can ask the question, "Was there, at this time, room in the mind of this man for any thought of caution?" Is not this the real problem? Of what value are safe practices if our men are not continuously alert to them?

With all our contests and committees, machine guards and safety rules, publications and speeches, with all the devices within our reach, our efforts will avail little unless we develop within the man on the job a state of mind wherein there is always room for thought of caution and the "safe way." Here is the tie-in with our moral responsibility. Here is where we failed to discharge our responsibility because we failed to establish in this man an everlasting consciousness for the "safe way." Here is a challenge to every man in the plant, regardless of position. It isn't going to be easy, but we think we can do it. We

almost know that as progress is made, the results will be reflected in a continual betterment of our safety record.

Because I have been talking principally about the man on the job and safe work practices, it is not to be construed as indicating that we can play down the part that management has to do with the operation of a safe paper mill.

On the contrary, we are well aware that the broad, general features of any safety program must come from the very top. This is basic. The man at the top must throw the switch that sets the program in motion. Once in motion, it requires the varied skills of every man to keep it going. Only by contributing our skills, without limitations, can we expect it to gain the momentum necessary to carry us to our objectives.

How can these skills be contributed?

The engineering department follows certain safe practices. New machine designs and equipment lay-outs are studied from the standpoint of operating hazards. Blueprints are distributed to the operating groups for their study and appraisal. If necessary, a scale model is constructed. Prints are not submitted to a machine builder or the construction force with the final "go-ahead" until they have been approved by the men who will operate the equipment. There was a recent case where prints for a new machine were returned three times to the builder because in each new design there appeared a possibility for reducing the operating hazard.

It is standard engineering practice to equip all new installations with heavy duty line safety switches for locking open circuits to drives on agitators, stock pumps, vacuum pumps, and other equipment which is periodically stopped for cleaning, adjustment or repair.

The maintenance department, including electrical, also contribute their full share. They have set up a system for periodic inspection and report on cranes, hoists, and winder unloading devices. U-drain covers, elevator gates and cables, steam joints and piping come in for their share of attention on a routine basis.

The personnel department must be considered. Careful medical examination, rigid standards of physical condition where neces-

sary, and preliminary preparation in safety fundamentals are contributed by personnel. The importance of employee selection must not be under-estimated. The new employee today is the man on the job tomorrow. This is the raw material for the program. We are agreed that you cannot make a good product unless you start with the right material.

Now we come to supervision. A part of the group here this afternoon is well acquainted with the job that supervision has to do in the business of making paper. You are faced with new problems every day. In general terms they may be production, quality, or reduction of waste. Specifically, they may be a new machine start-up, new employees, transfer or promotion of older employees, excessive maintenance costs, etc., etc. These problems make the job. It is reasonable to believe our companies would not need supervisors or foremen if these problems didn't exist. The value of supervision to any organization is directly proportional to the assistance supervision is able to give in meeting and solving these problems. Top management has declared that the prevention of industrial accidents is foremost among these problems. Therefore, the safety phase of plant operation cannot be compromised with production or quality or any other responsibility.

A new man comes on the job. He has been indoctrinated in general safety by the safety director. The supervisor conducts an introductory interview and explains the job to be done, the importance of job safety and safe work practices and the emphasis that can be expected on this subject. The supervisor then personally instructs and demonstrates the accepted safe practices related to the job. This is done before the man starts to work on the job. Not tomorrow or next week. Not by someone else. But now, and by the supervisor. The same principles involved in "on the job" training for developing skills are applied to safety instruction. The hour-to-hour and day-to-day follow-up provide the opportunity for positive action, for repeating, checking, showing. This is the supervisor's first and best opening for developing a "very special state of mind."

There are quite a few first line safety jobs for the supervisor. A typical day will include an inspection of the pulp stock pile

in the beater room and the height and weight of loads being handled. He sees that adequate protective clothing is available and used. This might include asbestos gloves for handling hot doctor blades or hot broke from dryer jams, acid goggles, and rubber coats. He organizes a satisfactory system for maintaining good housekeeping in the department. He encourages his men in the use of safety shoes and safety goggles. He is alert to any sign of weakness in safety attitude and corrects the situation before serious damage is done. There is no paternalism here. He does these things because he has a deep and sincere sense of respect for the men with whom he works and loyalty to the organization he represents. He knows, and accepts, his moral responsibility.

We should look for proof of this acceptance. On a routine Monday start-up, the sheet follows the bottom felt on the last dryer section and wraps the stretch roll. This is a fairly fast machine and it doesn't take long to build up a heavy wrap. The stretch roll is located so that it is necessary to crawl in on the felt to reach the

wrap. If the dryers were to start with a man in this position, he would be drawn into the nip between felt and roll. Obviously, the clutch must be thrown out, tagged and a guard posted at the control lever before permitting anyone on the felt. This could be done, the wrap cleaned off the felt roll and have paper on the reel in seven or eight minutes. Now here you have a typical situation. The foreman in charge is, as always, under considerable pressure for production. But he also knows that clutches are not infallible. That they sometime grab and stick even though thrown out. The machine is line shaft driven and the drive is comparatively new and in good condition. There is no reason to believe it will not perform properly. Nevertheless, he orders the stock to be taken off, the machine shut down, the line shaft stopped. He calculates the risk and comes up with the obvious answer. The time taken to be safe can be expended a hundredfold if it will prevent a single instance of human suffering.

Contrary to usual form, I am not going to summarize this report. You may draw your own conclusions as you will.

Sulphite Pulp Manufacturing

(A Round Table Discussion)

Presiding: A. E. MINOR, Safety Supervisor, The Ont. Minn. Pulp and Paper Co., Ltd., Kenora, Ont., Canada.

Conference Recorder: FRANCIS H. WAGNER, Director of Safety, The Mead Corp., Chillicothe, Ohio.

1. How can you prevent SO_2 gas from coming from vomit stacks into buildings and open low areas?

Majority suggested stack should be raised and if necessary showers placed inside stack.

It was thought by several that this condition was an inconvenience rather than a danger. Also that the physical condition of the employees in the area should be checked very carefully. One company reported that an employee was overcome by small concentrations over a long period of time. Others in the same department were not affected.

2. Is the present permissible rating SO_2

gas still too much for the good health of the employees?

The Defariet Division, St. Regis Paper Company, has been ordered by the State of New York to eliminate SO_2 gas in the digester room.

Again the majority reviewed this as a nuisance rather than a dangerous condition under normal operations. Older employees, heart and asthmatic victims should not be permitted to work in this area. Emergency gas masks should be provided each employee.

3. How are Sodium Sulphide drums opened? This solidifies and expands in the drum. They weigh about 750 pounds

and the manufacturer suggests chopping the drum open with an axe. This proved to be too dangerous and the employees are using an air hammer to cut the drum apart. Employees are provided with the necessary personal protective equipment.

It was recommended that the company again consult the manufacturer and ask that they attempt to work out a procedure which will soften up this material and allow the drum to be opened up rather than cut open.

Any new procedure should be passed along to the Section through the Newsletter.

4. What provisions are made for the safety of an employee on an elevator in case of a power failure and a gas break occurring simultaneously?

One company has provided an auxiliary bell and light on each floor to show where the elevator is located at all times. An escape hatch in the top of the elevator has been provided, which is tied into the switch and will not permit the elevator to be moved with the escape hatch open.

5. What methods are used to fill Rock Towers?

A. Wheelbarrow loads are hoisted and dumped by employee at top floor level.

B. Concrete buggy is raised to top floor level by elevator.

C. Buggy car on track is raised by elevator with turntable at top floor level for moving car to dumping location.

D. Lift truck scoop dumps into hopper which contains bucket conveyors.

6. Electrical switches. Condensation and jars were reported to have caused conveyor and other switches to engage.

The group agreed that the only safe method for repairing equipment of this type is to tag out, pull switch and lock out Square D safety switch.

7. Unloading sulphur into pit or conveyor.

Agreed that men must wear goggles.

One company reported an explosion in this area causing sulphur to become imbedded in employees' skin.

Julius Draper recommended steam jet

into pit will prevent explosions and that stainless steel will prevent packing against walls.

8. Electrical cords. One company reported an explosion of an electric light extension cord in the sulphur pit.

It was suggested that explosion-proof low voltage extension cord be used in all tanks and pits.

9. Burns.

It was suggested that Dr. Stark, our Section Medical Advisor, be asked to give us an opinion on the qualities of the new "Rich Burn Oil."

10. What is procedure for cleaning out sulphur burner after shut down?

Employees should not be permitted to go into burner less than 48 hours after shutdown to prevent burns.

Vacuum is not to be used by anyone present.

11. How are acid samples taken at digesters?

Acid samples are taken through a $\frac{1}{2}$ to $\frac{3}{4}$ inch cooling coil into a lead pot.

12. How are chips gotten out of chip bin when they jam?

A. Steam jets loosen chips from sides of bin.

B. Steam lance is used by cook or cook's helper to loosen chips.

C. Employee equipped with life line goes into chip bin to loosen chips. An employee is placed at top of chip bin as an observer and helper in case of an emergency.

13. Man lifts.

Two plants were using man lifts and in both the employees riding the lift face the belt.

14. What type of ladders are best to use to get into blow pit?

It was reported that the side rail broke on an aluminum ladder fastened in a blow pit.

Recommended that a stainless steel ladder in 6-foot sections be bolted together and fastened into pit permanently, in a wood lined cement tank.

15. Ammonia process—West Coast.

No brass or copper can be used safely. Use cast iron or stainless steel. Recommend manually controlled sprinkler sys-

tem around hot fumes. An 85-pound pressure sprinkler system turned on automatically because of hot fumes. System can be manually controlled 500 feet away.

16. Are visitors permitted in the Bleach Plant or Digester Room?

None except technical men and they must be escorted. One company has a system where a bell rings and a sign flashes on and off during the first five minutes of the blow time. No visitors are allowed during blow time and all repair men must report to the digester cook before starting a job in the digester building and report when the job is completed.

17. What precautions are taken in handling chlorine tanks?

All electric hoists are equipped with limit switches.

Ventilating fans are located near large chlorine tanks and in case of a leak or break an employee can hit the START button and run for the Scott

Air Pak mask which is located nearby.

18. Fire Brigades.

Volunteer fire crew are trained in the use of the Scott Air Pak and the M. S. C. Chemox masks.

Evacuation plans have been completed and the supervisors are held responsible for carrying out these plans, if needed.

19. Visitors in the mill. Open house constitutes certain hazards; however, the most dangerous locations are not shown (digesters).

Children over 14 with teachers are taken on tour through mill.

Employees may take their families into restricted areas of mill.

Open house tours have improved production and housekeeping.

20. Low voltage extension cords.

These should be a **MUST** wherever an extension cord is used around a metal tank, digesters, stock tank or water.

Sulphate Pulp Manufacturing

(Summary of a Round Table Discussion)

Presiding: D. V. HILL, Safety Director, The Mead Corporation, Kingsport, Tennessee.

Conference Recorder: F. O. SOUGHTON, Services and Safety Supervisor, LongLac Pulp and Paper Company Limited, Terrace Bay, Ontario.

The first problem was the possible presence of gas in cottrell precipitators during performance of maintenance work. A number of delegates commented on this problem which appeared to be somewhat general. It was emphasized that every effort should be made to eliminate the possibility of human failure due to the fact that hydrogen sulphide and other gases were sometimes present.

Specific suggestions included:

a. Testing for gas by technicians; b. Use of all purpose respirators by workmen involved; c. Adequate cross-ventilation; and d. Posting of guard outside precipitator when workmen are inside on any sort of work.

There were a number of instances cited wherein workmen had been overcome while

working in caustic tanks, manholes, evaporators and near evaporator hotwells. Some cases were not serious but others were, as men passed out completely and required artificial respiration. In one case, the eyes of five out of seven men were affected during the retubing of an evaporator. Lack of proper precautionary measures has resulted in fatalities. Specific suggestions included:

A. All tanks or chests should be thoroughly purged, washes, cross ventilated and tested for fumes before workmen are permitted to enter.

B. Individual tag lines should always be used on men entering tanks and chests.

C. When men are working inside tanks and chests, a guard should be posted outside to assist in case an emergency develops.

D. Respirators should always be worn by

everyone in a tank or chest where there is the slightest chance of gas being present or developing.

E. An adequate supply of low pressure fresh air should be blown in to chests, tanks or confined areas. This was recommended in preference to the wearing of ventilated suits wherever possible.

The hazard of lime burns in the industry is apparently widespread judging by the comments of delegates from widely scattered geographical locations. Obviously the problem is accentuated by heat which causes those involved to perspire more freely, thereby increasing the slaking of any lime dust on the body. Resulting burns are often deep seated. Mills in the warmer climates, therefore, have experienced the greatest difficulty in dealing with the problem. One such mill has tried all suggestions noted below without success. Specific precautions which have worked well in many mills are listed, nevertheless, in order of their apparent effectiveness.

A. The liberal use of vaseline on all exposed areas accompanied by immediate use of up to five per cent acetic acid the moment the slightest irritation is noted. In some mills individual employees are provided with a supply of both vaseline and acetic acid.

B. Use of protective creams formulated for the purpose by manufacturers of this type of product.

C. The liberal use of corn starch or talcum powder, both of which will readily absorb perspiration and reduce or eliminate slaking action.

D. The use of gauze, wrapped around parts of the body which might be rubbed by clothing impregnated with lime dust is also effective when used in conjunction with the aforementioned.

Other pertinent points related to the discussion were:

A. The need for lots of publicity regarding the hazards involved in lime handling with specific instructions related to necessary precautions.

B. Rotation of men if prolonged contact with lime is necessary.

C. Early elimination from contact with lime of any employee found to be sensitive to it.

D. The use of a medical "patch test" to determine the possibility of an allergy in borderline cases.

The next problem was that of opening sticking doors of railroad box cars containing pulpwood. Delegates commenting reported that their mills used mechanical types of door openers for the most part. One in particular, known as the "Come Along," was well rated. A caution was issued that some types of door openers were, in themselves, hazards and had been the cause of accidents. Employees using door openers of any type should be carefully trained in the use of the device as well as related hazards.

The question of what precautions are necessary when cleaning inside a recovery power boiler was raised by a delegate from a mill which had an unfortunate accident wherein an employee working inside a recovery boiler was struck by a piece of falling material which dislodged from the side of the boiler after all precautions had apparently been taken.

Specific recommendations resulting from the discussion of this problem included: the use of hard hats when there is any danger whatsoever from falling material; use of the type of clothing which will give workmen the maximum protection; and construction of a temporary overhead scaffold with some "catchall" arrangement which would give protection from falling material. (One mill uses a driver belt over a scaffold for this purpose.)

The next problem was that of unloading 5 foot lengths of wood.

Delegates commenting on this subject came up with a number of suggestions which had proved effective in their respective mills. One mill (whose employees use pulp hooks in the unloading operation) refuses any employee the right to use a pulp hook if he has a disabling injury involving a hook which results in more than a week of lost time. Some mills insist on the wearing of leggings. Others work on the theory that it is more important to train men to respect the hazard and they, therefore, hold regular safety meetings with the men stressing the importance of caution when performing work with pulp hooks. Such efforts apparently pay real dividends. The important role of supervisors in not easing up on the carrying out of specific job instructions (which include

the safe practices to be followed) was also emphasized.

One delegate referred to a special pulp hook design which had worked very effectively in his mill. (For information write to Sam Blackwell, Brown Paper Mill Company, Monroe, Louisiana.)

The next question was: Where should an accident be charged when an employee of one department is hurt while working in another department?

While it was agreed that the answer to such a matter rests entirely with the man-

agement of each mill, the opinion prevailed that the key to the problem was supervision. Examples of this principle cited were:

A. If a man is loaned to another department and his activities are being supervised by that department, any mishap which occurs during such an arrangement is charged against the department to which he is loaned.

B. If (as in the case of maintenance men) a man is injured in a wood room, for example, while under the supervision of a maintenance foreman, the maintenance department would be charged with the accident.

Current Safety Work in Sweden

By GUNNAR HULTMAN

Managing Dir., Swedish Pulp Employers Federation, Stockholm, Sweden

The two main industrial organizations in Sweden, the Swedish Employers' Federation and the Confederation of Swedish Trade Unions, are at present characterized by stability and strength, but this has not always been so. In the past extensive labor conflicts were the means by which the two parties sought to protect their respective interests under collective agreements.

In the early days of the organizations these conflicts were very bitter. Later on, a conscientious effort was made to preserve labor peace, but this certainly does not mean that open conflict has ceased to serve as a means of pressure in the Swedish labor market.

Freedom to resort to such means of pressure on vital issues continues to be of great importance, especially in so far as the consciousness of this freedom has a valuable stabilizing effect in the negotiation of peaceful settlements. This freedom has been carefully conserved by both workers and employers. Their common effort has also been to keep the state authorities aloof from decisions by the organizations involved, concerning the regulation of wages.

Negotiations were opened in May, 1936, when delegates of both parties met and called themselves the Labor Market Committee. A general stock was first taken of joint problems, whereupon special detailed investigations were made. The work was accelerated, and by September 12, 1938, the committee's

discussions had resulted in an unanimously adopted proposal for a basic agreement between the two parent organizations. The agreement was signed by the parties on December 20, 1938.

By this basic agreement, capital and labor have endeavored to safeguard freedom in the labor market, and have aimed at abandoning, in industrial negotiations, methods that irritate without being of essential value to either party. They have likewise demonstrated that they are able to discuss, and, in mutual understanding solve, among themselves, current social and economic problems of primary importance.

In the autumn of 1939 the question of industrial safety was taken up for discussion by the Labor Market Committee.

In May, 1942, when the employers' Federation and the Confederation of Trade Unions adopted regulations, they used the form of a recommendation, with the exception of the so-called reprisal clause which was made the subject of binding collective agreement.

By these regulations the institution of safety representatives which already existed and has not perhaps come to be employed to the extent desired, will become generally obligatory, and a certain minimum number of representatives is prescribed in relation to the number of workers employed by each undertaking. Special rules exist for the purpose of securing for the safety representa-

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tives the right to perform their duty without hindrance by the employer or anyone else.

Against this there are certain requirements concerning the qualifications of the representatives. The rights and duties of the representatives are regulated in regard to the manner in which criticism concerning safety and health devices may be submitted to foremen and employers, as is the presence of safety representatives at inspections and investigations, compensation for wages lost, etc. Finally, the regulations also contain provisions concerning safety committees. These committees have been made obligatory in undertakings of a certain size, and certain rules have been laid down as to their composition and duties.

Cooperation is an art that has to be learned. If people succeed in cooperating on one point, they are ready to believe that the field of cooperation can be broadened. This leads naturally to the need for further cooperation.

Nobody will dispute the fact that the organization of industrial safety provides a highly suitable field for collaboration and mutual understanding. Being free from the risk of political complications, the field is one in which intensive efforts benefit not only both parties, but production and the community generally.

There is ample room for voluntary achievement and mutual understanding at a time when social legislation is being intensified and industrial democracy is beginning to assert itself successfully.

The cooperation on safety measures that has developed in Sweden constitutes the very foundation for the intensification of individual initiative on both sides. Without being suspected of ulterior motives, the employer has the possibility of exercising thorough control of the employee with respect to his attitude to safety at work.

There are certain matters, however, that cannot under any circumstances be settled wholly on a cooperative basis, and these concern the drawing up of safety regulations for each place of work, the instructions to foremen, and the question of medical care. In these respects the main work must be done by the employer.

The safety measures pursued at work places in Sweden therefore assumed, in the nineteen-forties, quite a different form than previously. This new form developed pro-

gressively, especially in the major industries, on general principles which had been laid down.

The number of reported accidents has mounted more than the number of workers. The major rises have coincided with increases in the rates of sick pay.

Yet the incidence of deaths and serious accidents has continuously fallen, concurrently with a rise in the number of less serious accidents. We have in Sweden an up-to-date workmen's protection act, framed in great detail with respect to legal wording and motivation; and our rate of compensation implies in the main that a worker absent due to an accident at work will receive benefit equal to his earnings.

In consequence of this high compensation, there has been a substantial rise in the number of accidents involving less than one week's absence from work. It is needless to point out the serious effects that such a situation has on production.

The new feature of the intensified industrial safety measures in Sweden consists in the fact that the work is not being pursued by one party alone, but jointly by those who in some way or other are affected by these problems. This primarily means, of course, employers and labor, though it embraces too foremen, doctors, safety inspectors, and the government inspection bodies.

Even though cooperation of this kind is neither new nor anything but quite natural, the Swedish pattern perhaps differs from others in that it has been made particularly firm. The workmen's protection act in Sweden today includes detailed provisions on cooperation. These provisions are not legally enforceable; they are morally binding.

Behind the new legislation lies the voluntary agreement between employers and labor, which is designed to emphasize the necessity of bringing about or strengthening the cooperation between employers and workers in the field. Through such cooperation the safety work can gain more general recognition and thus lead to a substantially more favorable result than has been achieved before.

Voluntary agreements offer definite advantages, as they facilitate the practical application of desirable regulations in this field and particularly because they are apt to make the parties concerned jointly inter-

ested in the safety problems and to foster their own initiative and sense of responsibility.

This voluntariness brings about a beneficial release from the old fallacies about social rights, more private liberties and irrational lack of interest.

Although no objections in principle would be raised in this respect, Swedish employers have not been inclined to give the agreement a collective form; they have felt that the legal responsibility and legal protection afforded by a collective agreement is of less importance than the moral responsibility inherent in a voluntary agreement.

The employers contend, moreover, that it would not be beneficial to introduce in this field, where the respective parties have interests that are fully in common, the compulsion which the collective agreement entails and the negotiation procedure laid down therein. This, of course, is only one side of the matter; it can also be viewed from the standpoint that a collective agreement places labor under very special obligations and lends a specific sanction and emphasis that would benefit the safety measures.

The use of the collective agreement in this field would perhaps serve also to stimulate the interest of labor in productivity. And since this is a question of organized cooperation for the common good, it might also be of considerable benefit to subject cooperation to sanction by means of a collective agreement, and not leave it in the air.

Safety measures can never be really effective unless discipline is maintained at the place of work, and in point of fact the cooperation in this field enables the workers themselves to demand discipline among their own ranks. Representatives of labor have often pointed out that the machinery of production cannot function until full discipline exists.

At the moment our primary aim, which is being pursued, consists in the establishment of a campaign for joint voluntary safety work, in which will be incorporated foremen and doctors in particular.

Today, 30,000 safety representatives are at work in Sweden (roughly 5,000 in the nineteen-thirties). In 1949 a campaign was launched throughout the country, being concentrated to a period of six weeks, the substantial costs of which were partly cov-

ered by the government. In conjunction therewith, meetings in which all parties cooperated were held at virtually all places of work.

This year many hundreds of such meetings have been held, particularly among foremen, and have been partly financed by the government; but the whole campaign has been organized by the joint council. At one safety meeting in Stockholm two thousand foremen had assembled and speeches were delivered by leaders of both the principal organizations.

Although the rate of compensation was raised substantially in 1948, this voluntary work has enabled us to stem the rising incidence of accidents.

The following is illustrative of the attitude of labor to cooperation.

The situation had arisen in which virtually the entire contents of the voluntary agreement were incorporated in the new act. Employers then started to advocate the cessation of cooperation in this field. To the committee that was set up to examine the possibilities of continued cooperation, labor had nominated three high officials of the Confederation of Swedish Trade Unions. These representatives conveyed to the committee the workers' earnest appeal to the Swedish Employers' Federation not only to maintain the cooperation but to amplify it. Their statement ran roughly as follows:

"We could not give our workers any explanation of why cooperation has ceased in this field. They now have cooperation in the blood. They would miss this cooperation, which has unquestionably had repercussions in other fields, enhancing as it has unity and productivity."

As regards the attitude of the top men to safety work pure and simple, the ideal state of affairs has yet to be reached in Sweden. In many quarters the old view still prevails that such measures can be pursued sporadically and without the unity and attention that characterizes productive work.

Measures are apt to be shelved for the time being, and persons originally appointed to supervise the safety work in a company, or whose principal assignment it is, usually accumulate a burden of other work such as time studies, leadership of home guard units, the carrying through of instructional schemes, etc.

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It is nevertheless clear that in cases where the safety work is conducted by a person whose sole task it is, and where the places of work are thus subject to systematic control, it leads to safer working conditions and therefore encourages employees to stay in their jobs—an exceedingly important consideration in Sweden today, where the unemployment of the nineteen-thirties has been followed by full employment and an acute shortage of labor, with all the repercussions that this entails.

But when, some day, the men at the top develop the same sense of responsibility in

this respect that prevails in the United States, we shall undoubtedly go far in our safety work, notwithstanding the very high rate of compensation. We shall then have satisfied the final, and perhaps the most essential, requisite for the ideal state of affairs, in which the place of work will be the safest place, and cooperation between employers and workers, together with foremen and doctors, will serve to bring the incidence of accidents down to a minimum; after which the next step will be the realization of preventive medical care and general sickness insurance.

Paper Manufacturing

(Summary of a Round Table Discussion)

Presiding: HAROLD S. WILSON, Safety Eng., Liberty Mutual Insurance Co., New Orleans, La.

Conference Recorder: LAMBERT LOUY, Safety Dir., Container Corp. of America, Chicago.

Mr. Gold of the Howard Smith Paper Company raised the question; How is sulphuric acid handled and what safety precautions are taken?

Mr. Gibson of Alton Boxboard stated that in their company they had rubber carboys, acid wagons, and enforced the rule that their employees must wear rubber gloves and rubber aprons.

Mr. Schwartz of Hopewell, Virginia, suggested that their employees are also, in addition to the other equipment, forced to wear goggles and rubber boots in handling this material.

Mr. Lampton of St. Regis raised the point that this material if handled slowly, will not splash, and if the proper type of equipment is used in order to direct a small stream that cannot splash and, along with proper training of employees we can go a long way toward eliminating any accidents caused by the splash of acids.

Mr. Miller of Gladfelder also emphasized the slow pouring of the streams. He mentioned that they have found a satisfactory substitute for sulphuric as well as muriatic acid. There is a new product on the market known as RX Defoamer distributed by the Pioneer Salt Company of Philadelphia.

Mr. Julius Draper of Consolidated Paper Corporation raised the question of accidents

on rewinders on paper machines, and what has anyone been able to do about it?

Mr. Bob Gell of Kodak Park submitted a drawing of a guard that they are using. Many of the participants in the meeting requested copies. Mr. Wagers of Champion made the statement that the roll must be felt for wrinkles, etc. A long discussion ensued on this point—is it really necessary to feel the roll and, if so, what can be accomplished by feeling the roll? Mr. Justice of Cornell Paper Products was of the opinion that this was more a mental problem than one of necessity.

Mr. Wagner of Meade suggested that employees not be allowed to feel a roll until it is at least 18 inches in diameter. This, of course, suggests better training, better description of job duties, and better discipline of employees.

Mr. Lampton of St. Regis stated that in his experience with the rewinder it was the practice that before the rewinder operator started his machine he counted the employees in his crew to be sure that they were all well in the clear before the machine started, and gave definite orders to them not to get close enough to be caught in the nip.

The overall discussion on rewinders seemed to indicate that nearly everyone was of the opinion that this problem still re-

quires much more study. The most practical answer given was the drawing submitted by Mr. Gell.

Mr. Dutcher of Flint Kote raised their problem of feeding extra heavy board into calenders as the next question. No apparent answer was forthcoming on that.

Mr. Louy of Container Corporation stated that they do have a calender feeder which works well with liner board and lighter boards. The drawings of this calender stack feeder have been submitted to the National Safety Council and are available on request. As to Mr. Dutcher's question on feeding extra heavy boards, there seems to be no apparent answer, and certainly this will require further study.

Mr. Hartwig of Crown raised the next question, which is causing them somewhat of a problem; that of high-pitched noises coming from couch rolls.

Mr. Draper of Consolidated suggested the use of a Lee Supersonic Hearing Protector. This hearing protector does cut out the high-pitched noises yet men can engage in normal conversation. They recommend its use because it is good, but they have difficulty in getting their men to wear them.

Mr. Wagner raised the next question—"What is a safe distance between the spread roll and the smoother roll of the coating machines?"

Mr. Wagers of Champion said they had encountered this problem and had increased the distance between these two rolls to about six inches and that they had had no accidents on this equipment since that time and they feel that the six inches is a safe distance.

Mr. Wagers asked the next question—"What has been done by companies having two vertical stack reels wherein the possibility exists of a man being pulled between the two stack reels when the amount of paper of either reel has been allowed to build up large enough to cause a nip point?" The general consensus of opinion was that

it required a better training program for the employees and more discipline to try to eliminate an engineering problem that is due to old fashioned equipment. Gradually this type of equipment is passing out of existence, but as long as there are some of these vertical reels being used we will have to watch our employees closer and see to it that they stay away from this possible nip point.

A somewhat general discussion followed, wherein several participants asked the question—If it were not possible to get more information through our "News Letter," that is, more specific information on engineering problems and the like. The Chairman said he would contact Mr. Allen and see if he had any suggestions along this line. The paramount question here deals with drawings of ideas that are used in one mill that could well be used to improve safety in other mills.

Mr. McCauley of the Anglo-Canadian Paper Company asked the question "What are other companies doing with regard to dust from various paper dies?"

Mr. Gell of Kodak Park stated that they use an air mask which they buy from Mine Safety Appliance Company, and as an added precaution the employees are urged to wash down with plenty of clear water immediately following their work with dies.

Mr. Lum of Peckett Paper Company asked the progress of the Paper Mill Code. The only answer that could be given was that it is in process and we expect it to be completed sometime in the near future.

The discussion continued on safety glasses and training and some of the other major problems encountered by the safety men and nearly everyone in the room participated in this overall discussion.

The final note of the meeting was a suggestion that it takes constant hammering, punch, and push to see that our safety program is working successfully.

Pulpwood Logging

(Summary of a Round Table Discussion)

Presiding: JOHN CURRIE, Woodlands Div., Great Lakes Paper Co., Ltd., Fort Williams, Ont., Canada.

Conference Expert: JOHN C. MADER, Safety Eng., Employers' Mutual Liability Insurance Co. of Wisconsin, Ironwood, Mich.

Mr. Currie opened the meeting with a short talk on the safety efforts in his company, discussing the fact that the mill operations seem to have had the concentration of safety work in the past and that not too great an effort has been extended in the woods but that this is being done now. He also explained that the accident increase was perhaps due to the introduction of new people into the industry. He did agree, however, that this was no excuse for having the accidents and he said that we do not do enough and that we must do more in the way of education to stop accidents.

The subjects to be discussed today are what we can do as pulpwood loggers to decrease the accident frequency of the industry and also what can we do to increase the logging representations at the National Safety Congress.

The discussion was opened by John Schlueler of the Consolidated Water Power and Paper Company, Rhinelander, Wisconsin. Mr. Schlueler made the statement that perhaps the reason why we don't get good representation at the Congress is the fact that our pulpwood logging and round table discussion is being held on the wrong day. He said he thinks it's too late in the program and suggests that we move the round table discussion up to Tuesday or earlier during the Congress. Mr. D. D. Chant of the Ontario Pulp and Papermakers Association, Toronto, Canada, added that he thought the Council setup for logging was wrong. As it is at the present time, we have logging under the Wood Products Section and the pulpwood logging under the Pulp and Paper Section and there are some who would like to see some action along this line to bring the two together.

Mr. Howard E. Lilly, Safety and Employment, Ontario Paper Company, Huron Bay, Ontario, suggested that we make more effort to get the woodland division of the companies represented in the Pulp and

Paper Section to send more men from this division to the Congress, therefore, building up representation. He said this would more or less awaken the companies to the fact that we do have such discussions at the Congress and he advised more publicity along that line.

Mr. Chant suggested that we make a specific request that the pulpwood logging session be moved forward in the week even if it were necessary that we move from the general pulp and paper sessions in the Stevens Hotel to another hotel for this round table discussion.

The general conclusions along this line are that the program should be changed to facilitate those people coming down for one or two days so they can take in our discussions and that we increase the publicity among members to have more representation from the woodlands divisions.

The next subject for discussion was opened by Mr. Fred Morrish who wanted to know—are more people putting head protection on the lumberjacks in the woods. Mr. John Schlueler asked Russell Hammond, Safety Engineer for the Michigan-Wisconsin Council of Safety, to describe the milestone that we have passed in this respect.

Mr. Hammond explained that they have had two lumberjacks come into different logging camps looking for jobs and that they had their own hard hats and this is really a milestone as far as getting head protection on the men in the woods. He also explained how to go about getting the hard hats put on the lumberjacks; that it is strictly an educational program, explaining to them the benefits of wearing them and the disadvantages in not wearing them.

Mr. John Schlueler explained that the Safety Council setup has one purpose; to promote safety in the woods. They try to take on one project a year such as safety shoes and hard hats. The question was

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asked—who buys the hard hats, the operator or the lumberjack?

John Mader, Safety Engineer for Employers Mutuals, explained that in some operations the operator and the lumberjack share the cost on a 50-50 basis and in other operations the lumberjacks are charged with the cost of the hat.

Mr. Chant asked if they could be worn in winter and it was explained they have a winter liner sufficient for use in our severe winters in the north.

Mr. H. J. Bennett, Safety Supervisor for the Ontario-Minnesota Pulp and Paper Company, asked where are the foot injuries? Are they on the toes or more of them on the side of the foot? He explained that most of his injuries were at the side of the foot near the ankle. Mr. Chant explained that this problem was being worked on by the safety shoe companies in Canada in order to give a protection in the upper part of the boot to deflect the axe or stop some of the force of the axe but he thought this would not work due to the fact that it would add too much weight to the boot and make it impractical in the woods.

Mr. R. W. Croucher, Safety Officer for the M & O Paper Company at International Falls, Minnesota, said that he didn't agree with that type of protection at all on the lumberjack's foot or leg but that he did agree with the safety toe in the boot. He said it is much more important to teach the men the proper use of the axe to prevent cuts rather than to use such a protective device as this.

The meeting then went to the general discussion on how companies get safety to the men in the woods. Some advised the use of safety meetings and films. The general conclusion was that we must not let the safety educational training die. John Mader asked a question as to the importance of the length of the handle of the axe and it was generally agreed on that for the length of pulp the short-handled axe was best because of the degree of control and that a 2½ or 2¾ pound axe was perhaps the best.

Mr. Harold Alley, the staff representative of the National Safety Council, mentioned that we have some Swedish posters that were to be distributed to us as a show

of the work being done in Sweden along this line. There was a lot of discussion on the fact that we do not seem to have a selection of films dealing with the logging industry and that perhaps the film director, Mr. Griffin, of the National Safety Council, could make up such a logging film if the conditions were right and the companies would underwrite the expense involved.

The several people from Canada indicated they had safety films available from their different associations and it was agreed that these people would write to the *Newsletter* editor advising him of the films they have and where they can be obtained. One film in particular was mentioned and this was called "Trees" which was put out by the United States Forestry Service and it was agreed that it is a good film for our division.

Mr. Alley told of the publications of the pulpwood logging posters made up by the American Pulpwood Association and we were advised that these posters are being published and will be available to the companies for about twenty cents apiece.

The next subject for discussion was brought up by Mr. Currie and this was the matter of safety competition. What are we doing along this line?

Mr. Mader explained the Timber Producers Association contests run in the Upper Peninsula and Wisconsin and Mr. Currie explained the contest which Marathon Corporation is starting this year in their Canada operations which is based on a definite frequency rate.

Mr. Cook, Manager of the Quebec Pulp and Paper Association explained that they run a contest on a merit system and as this was quite lengthy he did not go into it too deeply. These different ideas will be written to Harold Alley in an effort to produce a contest for the Pulp and Logging Divisions which is satisfactory to all members. There was quite a lengthy discussion on the use of the job training series set up by the U. S. Government in training employees in the woods along the contest lines. It was concluded by all members there that they would write their ideas to the National Safety Council for discussion with the contest committee of the Pulp and Paper Section and come up with some idea as to how a contest for the loggers could be run.

The Pulp and Paper Associations in Canada are quite active and the statement was made that they are saving the member firms millions of dollars through their safety efforts. To spread this information about a bit it was suggested that a special sup-

plement to the Newsletter be made up and that the Quebec Association, especially, write to Mr. Alley giving him the facts so these safety ideas which they are putting into effect can be spread out to the whole membership.

Insulation Manufacturing

(Summary of a Round Table Discussion)

Presiding: A. S. KEEN, Safety Director, Armstrong Cork Company, Lancaster, Pa.

Chairman G. E. Allen, Personnel Manager of the Wood Conversion Company, Cloquet, Minnesota, opened the round table conference by explaining briefly the history of the insulation manufacturing committee. He pointed out there were, at present, eleven companies reporting monthly accident frequency rates to the National Safety Council.

He stated it was difficult at first to obtain reclassification of several of the companies when the break down was made for the 1951 contest period. He also pointed out that following the general pulp and paper executive committee meeting a session was held with members of the group to determine what future activities for the year 1952 should be undertaken. It was stated that the group felt the development of general papers on the industry would be best to start with from which specific subjects could be studied. No assignments as yet had been made but it was felt that the work on the papers should be started relatively soon.

T. J. REED (Johns-Manville, Natchez, Miss.): Who are the participating plants in the insulation manufacturing safety contest?

G. E. ALLEN read the list of companies who were asked to participate in the insulation contest and explained that the Council, as yet, had not furnished us with a list of the participating companies.

M. F. MATTSON (Insulite Division, International Falls, Minn.): Are the first aid men paid to take first aid training, or are they trained on their own time? (Most of the companies present paid the employees to take first aid training.)

T. J. REED: First aid training should be considered as a part of production and consequently the employees should be paid to take this training.

W. A. KOSKI (Insulite Division, International Falls, Minn.): Our first aid men are trained on their own time and consequently there is a shortage of first aid men on certain shifts.

B. J. LEE: Our first aid men are trained on company time and we have two men, plus the shift foreman, trained in first aid on each shift. We have a first aid station in each production department which is kept locked to prevent the first aid supplies from becoming unsterile and to prevent employees from administering first aid to themselves.

W. A. KOSKI: We tried locks on our first aid cabinets, but they did not prove to be satisfactory.

G. E. ALLEN: Before we locked our cabinets the first aid supplies were always scattered around and left in unsterile condition.

R. BLUM (The Flintkote Company, Meridian, Miss.): Is there a chance of employees not reporting their injuries when the first aid cabinets are locked?

W. A. KOSKI: We find that there is more of a chance of employees not reporting their injuries when the first aid cabinets are left open, because they give themselves first aid and forget to mark it down on the first aid record.

B. J. LEE: When the cabinets are locked the men can't give themselves first aid, therefore they have to report to the first aid man and he makes a report of the injury.

T. J. REED: What is the penalty if a man does not report for first aid?

B. J. LEE: We have a penalty rule for unsafe acts which would be used if an employee did not report for first aid.

M. F. MATTSON: We have first aid men on the night shifts and a full time nurse in

during the day shift who follows up all first aid cases.

R. NICELY: How large an area is a nurse supposed to cover?

W. A. KOSKI: In large plants there are several first aid stations with a nurse in charge of each station.

M. F. MATTSON: In case of a serious accident the nurse is taken to the injured by ambulance.

T. J. REED: I believe we should all attempt to sell management on the need for nurses in the plant. Also, at the present time, unions are asking for nurse service. One case of serious infection would pay for a nurse for a long period of time.

B. J. LEE: I believe that by taking minor first aid cases out of the hands of the first aid men we would be detracting from the safety program.

W. A. KOSKI: We believe that the men have more faith in a nurse than in a first aid man, therefore a confident person is a more efficient worker.

F. A. SCHULZE (Ruberiod Company, Joliet, Ill.): Nurses are definitely needed in plants because many cases are sent to doctors outside of the plant when a nurse could handle them just as well in the plant, and thus save a great deal of lost production and also reduce the cost of medical treatment.

H. B. DOBSON (Celotex Corporation, Chicago, Ill.): It is evident from the discussion that there are two types of first aid services predominant in our plants: 1. First aid men and cabinets located throughout the plant; and 2. A detailed medical service including doctors and nurses. These two types of services can not be available in the same plant because doctors will not take the responsibility for novices administering first aid.

F. A. SCHULZE: Do more infections occur in plants where there are first aid men or where there are nurses?

R. W. CROUCHER (Minnesota & Ontario Paper Company, International Falls, Minn.): We have both types of service in our company and we do not find any difference in the number of infection cases.

A. S. KEEN: The availability of first aid facilities plays an important part in the number of cases reported.

T. J. REED: Are we reporting our accidents to the National Safety Council? If so, do we have any hazards in common? Can we exchange information on accidents?

G. E. ALLEN: We have an accident analysis report that we would be glad to send to the different companies.

T. J. REED: In some locations we have wet smooth concrete floors. What can be done to eliminate the slipping hazard?

R. NICELY: We have etched our smooth concrete floors wherever we have a wet condition.

B. J. LEE: There are several anti-slip paints on the market which will considerably reduce this slipping hazard.

W. A. KOSKI: We have many injuries resulting from hooks slipping out of the pulpwood in the wood yard during the winter months.

B. J. LEE: We use a different point on the hooks during the winter months and have considerably reduced our accidents while handling pulpwood. We will be glad to show you the hook point that we use.

H. B. DOBSON: Let us conclude the discussion and arrive at some conclusion about the exchange of accident information.

T. J. REED: How about sending each other reports on unusual accidents?

H. B. DOBSON: Wouldn't it be desirable for us, when we get back to our plants, to write down our common problems and send them to some central point where a form could be drawn up that would give us the information we desire.

It was agreed that members of the insulating manufacturing group would submit descriptions of all accidents, causing disability injuries, to the committee chairman for general distribution to the membership. If additional information was desired in regard to any of the reports, members themselves would contact the safety director who submitted the report. It was agreed that the chairman would send each member of the committee a mailing list for the entire insulation manufacturing group.

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