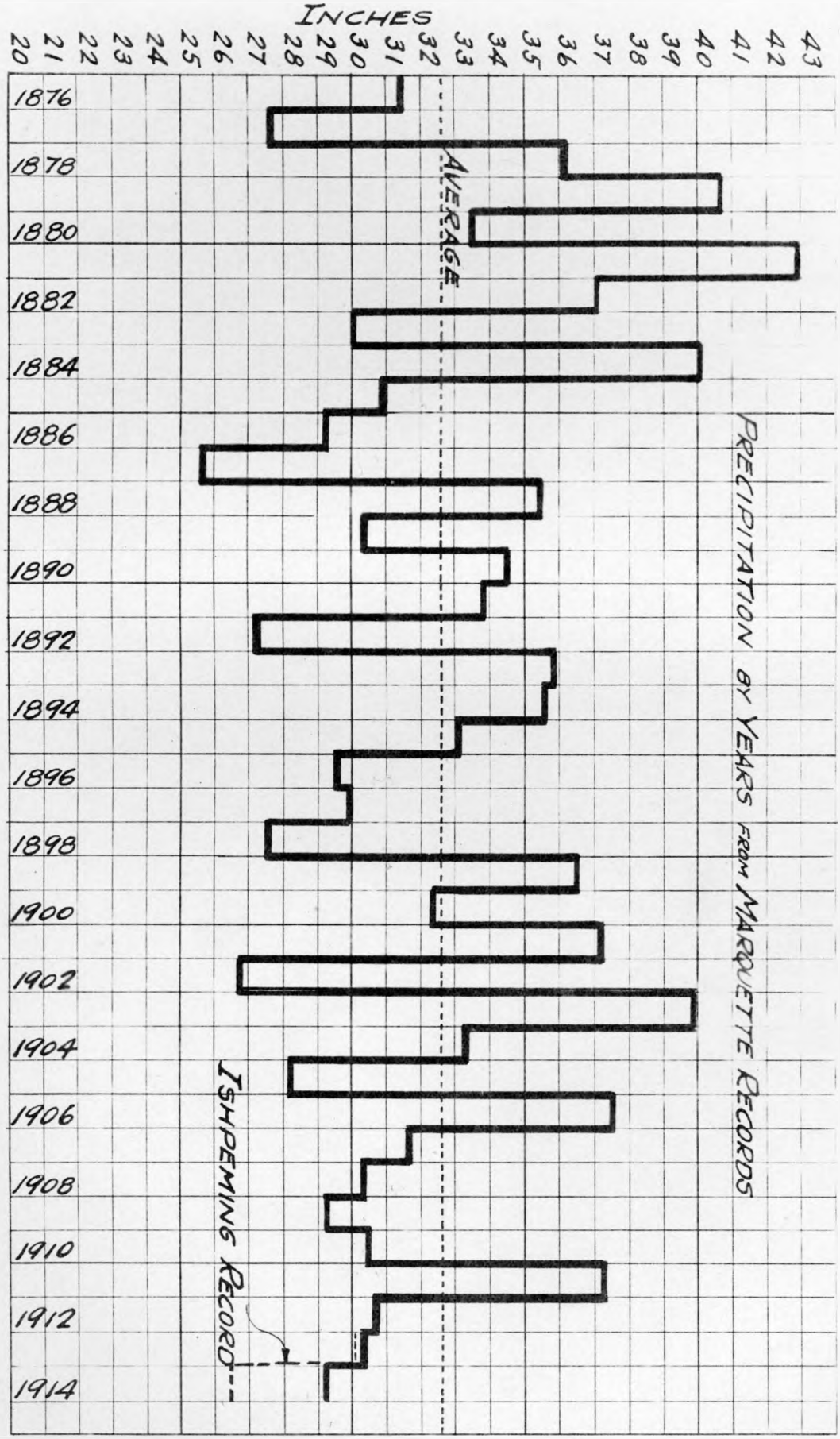
INCHES
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43
1876
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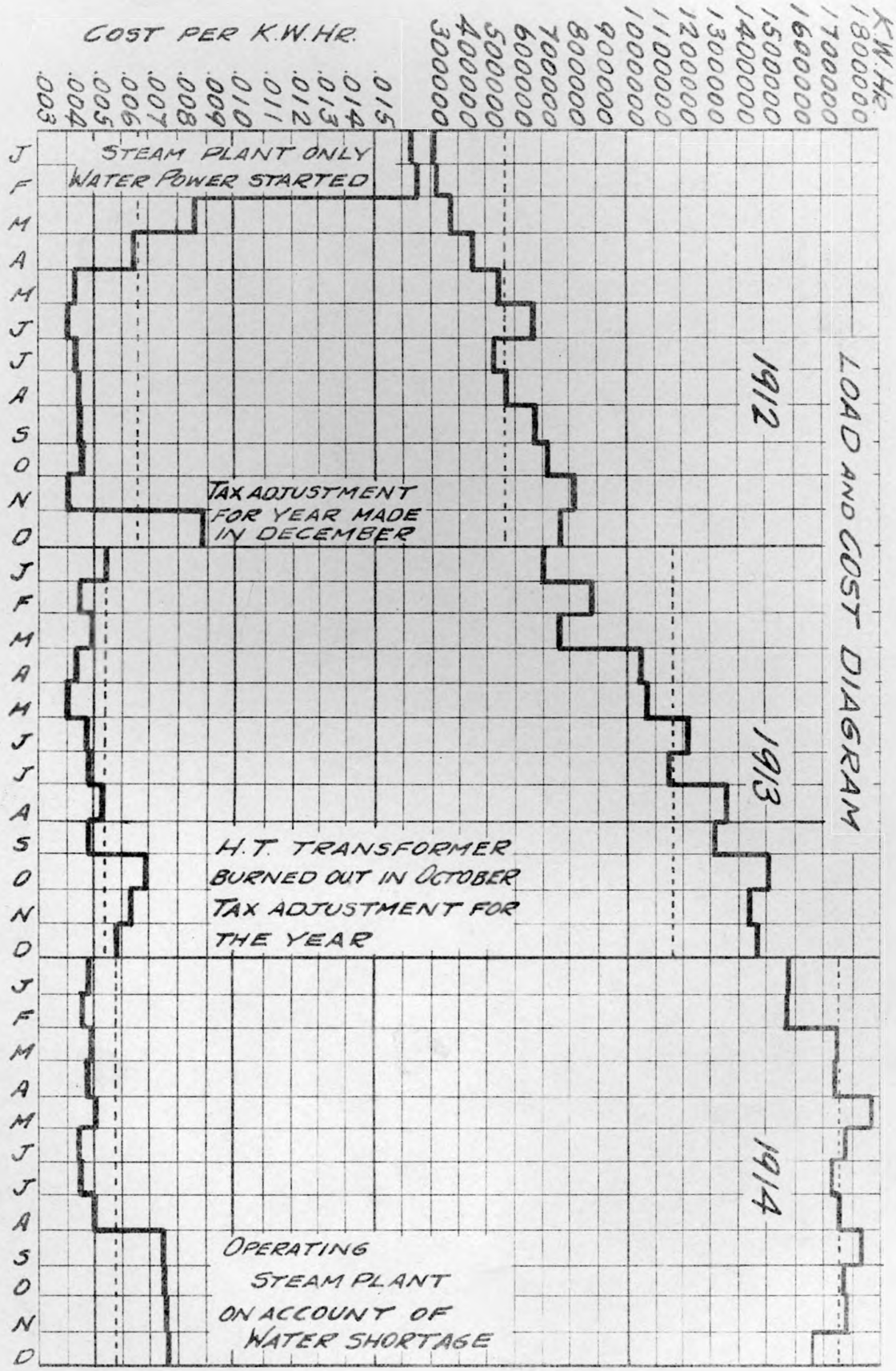
1912
1914
AVERAGE
ISHPEMING RECORD
PRECIPITATION BY YEARS FROM MARQUETTE RECORDS


LOAD AND COST DIAGRAM
COST PER K.W.HR.
.003 .004 .005 .006 .007 .008 .009 .010 .011 .012 .013 .014 .015
K.W.HR.
300000 400000 500000 600000 700000 800000 900000 1000000 1100000 1200000 1300000 1400000 1500000 1600000 1700000 1800000
J F M A M J J A S O N O J F M A M J J A S O N O J F M A M J J A S O N D
1912
1913
1914
STEAM PLANT ONLY
WATER POWER STARTED
TAX ADJUSTMENT
FOR YEAR MADE
IN DECEMBER
H.T. TRANSFORMER
BURNED OUT IN OCTOBER
TAX ADJUSTMENT FOR
THE YEAR
OPERATING
STEAM PLANT
ON ACCOUNT OF
WATER SHORTAGE

ANNUAL REPORT

(1914)

OF THE

SAFETY DEPARTMENT.

****

The Safety Department was conducted the past year along the same system as that of the previous years of its existence and with the same organization as was employed in 1913. This system includes the examination and filing of the various safety reports which are made at the mines; the training of employes in the use of rescue apparatus and first aid methods; rescue and first aid service; safety inspections of mines by the safety inspector, and foremen and workmen committees; and monthly meetings by the Central Safety Committee for the proper classification of personal injuries and the consideration of all important safety subjects.

MINE RESCUE WORK.

Mine Fires.

The danger of fire underground is ever present at our mines but the necessity of special precaution for protection against fire is not as fully appreciated at the present time as it should be. The fact that many mines have been operated during long periods without fires have given some operators a feeling of safety and they have not adopted preventative and protective measures. In a report on fires in the Lake Superior Iron Ore Mines, December 1913, by the Bureau of Mines, there is listed a record of 31 serious fires which occurred during a period of 23 years ending May 1913, which caused a loss of twenty-two lives. This record, however, is regarded as far from complete. Since the organization of the Safety Department, four years ago, our Company has suffered two serious fires underground and four small ones, which were quenched in their incipient stage by the prompt action of employes. The first serious fire was in the Gwinn Mine, March 4th, 1911 and an account of it is recorded in the annual report for that year. The second one, which was the most serious fire in the history of the Company, occurred in the Negaunee Mine, January 11th of the past year.

Negaunee Mine Fire.

This fire was detected Sunday evening, January 11th, about 6:30 P. M. by the pumpman on the 6½ level, who smelt smoke coming from the pump-house on the 9th level. He telephoned an alarm to the hoisting engineer who was on duty. The engineer at once sent the brakeman to the dry where he found John Beebe, the other pumpman, who decided to investigate immediately, agreeing to telephone to the engine house if he succeeded in locating the fire and needed assistance. The engineer, failing to hear from Beebe within a reasonable time, telephoned Captain Ware who summoned a number of rescue men living in the vicinity of the mine. A crew of three, Staples, Erickson and Frederickson, proceeded towards the fire for the purpose of finding Beebe, while Captain Ware and Night Captain Barrett, remained close to the smoke line. Beebe was not located but the fire was found in the pump room and a stream of water turned on it. Erickson found himself weakening and a retreat was started but Staples and Frederickson were compelled to abandon Erickson, who is a heavy man. Reaching fresh air their apparatus was transferred to Barrett and Uren, who went to Erickson's assistance. They assisted him a short distance, when Barrett fell to the ground. Captain Ware, Staples, Frederickson and Olson entered the danger zone without apparatus and recovered Uren and in a short time Erickson crawled out by his own efforts. Several attempts were made to carry Barrett out but in vain. A little later the air current shifted, fresh men arrived from surface and Barrett was taken out, apparently dead.

About this time J. H. Williams, C. S. Stevenson and the Safety Inspector, equipped with the Ishpeming station apparatus, reached the danger zone. Every effort was made to revive Barrett and attention was given to Ware and Erickson, who appeared to be suffering the most. A motor was placed in operation and the victims were taken to surface and placed in the care of physicians. The crew returned to the fire and on investigation it was agreed that there was no chance to recover Beebe alive and that the most practical thing to do was to check the heavy current which prevailed, by placing brattices across the drift leading to the pump station. Mr. Duncan,

who had arrived on the scene, was consulted and authorized this work. Two stoppings were erected, which reduced the circulation very exceedingly and probably was an effective factor in limiting the extent of the fire, which gradually became extinct during the three succeeding days.

On Monday morning additional equipment was obtained from the Oliver Iron Mining Company and rescue corps from the Maas, Lake and Salisbury mines were summoned. A number of investigating trips were made by a rescue corps consisting of five men to determine the ventilation in various parts of the Negaunee and Maas mines and for the purpose of keeping the large pumps on the 6½ level in operation, which was absolutely essential in order to prevent flooding the mine. In each instance a second crew, fully equipped, was stationed on surface to render assistance if help should be needed. The rescue crew recovered Beebe's body Wednesday morning, which was found submerged in water a short distance from the 9th level pump station, where the fire had broken out.

The fire and the two lives lost thereby were considered very carefully by the Central Safety Committee. The fatalities were classified as trade risk accidents. The rescue apparatus was tested a few days prior to the accidents by J. H. Williams and a report was filed in the office of the safety department stating that it was in good condition. After the fire it was tested by a representative of the Bureau of Mines and also by Mr. C. S. Stevenson, both agreeing with the report filed in our department. It was the opinion of Superintendent Elliott and others that Barrett had died from heart failure. The collapse of Erickson was probably due to failure to receive sufficient air resulting from his large size, combined with overexertion. The fact that he recovered and worked his way to safety without assistance proves that the apparatus was working satisfactory. He did not suffer any bad effects from his experience and was on duty the following day. It was unanimously agreed by all the members of the Central Safety Committee that every safeguard possible to prevent a recurrence of accidents of this nature should be enforced. The measures adopted for preventing underground fires and also for protection against fires are herewith

enumerated:

Fire Prevention.

The use of candles underground for any purpose whatever is prohibited.

Pump stations shall be fireproof.

Electric wiring shall be constructed safely and inspected frequently.

Fire Protection.

Special fire rules have been adopted and must be kept posted at all mines.

A mine telephone shall be kept in each mine office and telephone signals shall be posted at each telephone.

A mine rescue crew shall consist of not less than five members.

At each mine an employe shall receive special training and shall have charge of rescue work at the mine where employed.

Electric hand flash lights shall be provided as a part of the rescue equipment.

A roll of brattice cloth shall be kept at each mine.

A canary bird shall be kept at each mine.

Rescue Equipment.

When it was first decided to maintain rescue stations the question arose as to what type of apparatus to purchase and the number that would make an efficient crew. The Bureau of Mines had been asked to render assistance at the Gwinn and Hartford mine fires, early in 1911, and in each case a crew of three men, equipped with Draeger apparatus, had been used. The matter was not decided hastily and after consulting the most reliable authorities obtainable it was concluded that three Draeger apparatus of the one-hour type would meet our conditions. It was believe that the relatively close distance between our stations would not cause a long delay in assembling the equipment of two stations in case of a serious fire. However, it has been the experience of the Bureau of Mines the past few years that a rescue crew should consist of at least five members. This experience of the Bureau of Mines was corroborated by our experience in the Negaunee Mine fire. The first few minutes in a mine fire are very apt to be the most critical

and that is the time when a skillful use of the apparatus by trained men should prove invaluable in the prevention of loss of life and property.

During the past year our one-hour type of Draeger apparatus has been exchanged for the latest two-hour model, on very fair terms. Two more machines were added to each equipment. Including the new station, which was established at the Republic Mine, the Company now has five rescue stations, each being equipped with five apparatus, a resuscitating device, either a pulmotor or lungmotor or both, electric flash lights, brattice cloth and a reasonable supply of replenishing material, such as oxygen, potash cartridges and batteries.

The latest model of the Draeger apparatus has two features worthy of mention, namely, the mouth breathing attachment and the so-called bye-pass valve. The mouth breathing attachment replaces the helmet, which was cumbersome and restricted the vision. By means of the bye-pass valve the wearer is furnished with a larger volume of breathing atmosphere but it should be resorted to only in case the supply of air is not sufficient to keep the wearer in normal condition. There are exigencies that may arise when it would be unsafe to use the bye-pass valve and employes are being carefully instructed and trained in its proper use. It is the opinion of Mr. C. S. Stevenson of our Educational Department, who is well qualified by his training and experiences as a mining engineer of several years experience with the Bureau of Mines, that our present equipment is undoubtedly the best on the market and that if it is kept in good condition and men are properly trained in its use that it should prove adequate to meet the demands that may arise by a fire in any of our mines.

In the following table is given a list of the new equipment, repairs and supplies purchased in 1914, their valuation and distribution. The total aggregate amounts to a large sum but the cost of the new equipment is the major portion, the cost of repairs and supplies representing about 14% of the amount spent. The maintenance of our five stations and the monthly training of crews at the mines hereafter should not cost more than $950.00 annually for at least 10 mines or approximately $95.00 for each mine.

Table I.

Showing Rescue Equipment, Repairs and Supplies for 1914; Cost and Distribution.

Equipment	Cost	
North Lake District		
5 Rescue apparatus complete with helmets and mouth breathers, and goggles	$742.50	
5 extra cylinders @ $18.00	90.00	
1 Water gauge	8.00	
6 Electric hand lamps	9.30	
1 Lungmotor	125.00	
	$974.80	
Republic District		
5 Rescue apparatus complete with mouth breathers only	575.00	
5 Extra cylinders	90.00	
1 Refilling pump	170.00	
3 Storage tanks	127.50	
1 Extra reducing valve	25.00	
2 Adapters	6.00	
10 Electric hand lamps	15.50	
1 Water gaue	8.00	
	$1017.00	
Negaunee District		
2 New apparatus complete with helmets and mouth breathers, and goggles	260.00	
3 Exchange, No. 1 for No. 2 apparatus @ $43.00	129.00	
8 Cylinders @ $18.00	144.00	
5 Mouth breathers complete with goggles	97.25	
1 Lungmotor	125.00	
6 Electric hand lamps	9.30	
	$764.55	
Gwinn District		
2 New apparatus complete with helmets, etc.	260.00	
3 Exchange, No. 1 for No. 2 apparatus @ $43.00	129.00	
8 Cylinders @ $18.00	144.00	
5 Mouth breathers complete with goggles	97.25	
1 Lungmotor	125.00	
6 Electric hand lamps	9.30	
	$764.55	
Ishpeming District		
2 New apparatus complete with helmets, etc.	260.00	
3 Exchange, No. 2 for bye-pass type	84.00	
11 Cylinders @ $18.00	198.00	
4 Mouth breathers complete with goggles	74.00	
1 Exchange mouth breather	7.00	
1 Finimeter	9.00	
1 Lungmotor	125.00	
6 Electric hand lamps	9.30	
	$766.30	
Credit on parts returned	50.39	
	$715.91	
Total		$4236.81

Table I. (continued)

Repairs	Cost	
3 Breathing bags	$45.00	
3 Sponge bags	6.00	
3 Rubber inflators	6.00	
2 Sets pump packing	4.00	
9 Reducing valves repaired	45.00	
6 Washers for wobble plates	3.00	
2 Finimeters repaired	3.00	
Miscellaneous repairs	4.10	
	$116.10	
Total		$116.10

Supplies	Cost	
250 Potash cartridges, #1	$250.00	
150 " " #2	180.00	
11 Oxygen tanks	49.50	
Miscellaneous supplies	5.50	
	$485.00	
		$485.00
Grand total,		$4837.91

Rescue Training.

Rescue training was in charge of J. H. Williams and was carried out at all operative mines during the past year. The experience of the Negaunee Mine fire brought home forcibly to all of us the value of having employes who were not only thoroughly trained in the use of the apparatus but also who are qualified physically for this kind of work. The large man, because of his size and ability to do heavy work, is apt to disqualify himself for service where a smaller man will meet the conditions made imperative by the limitations of the apparatus. Special attention has been given the past year to eliminate men who by size, age or personal inclination should be eliminated from further training. This action has resulted in the dropping of twenty-four men, several of whom were among our best trained rescue men. It may be worthy of note to state that at the time of the Negaunee Mine fire that all men who were called upon to render assistance responded without a moment's notice and there has never yet been heard any expressions of reluctance to service in case an emergency should arise. There were, however, several men who felt that their age and their physical disabilities made them unfit and at their solicitation the safety depart-

ment acquiesced to their request that they be discontinued in training.

The training period is usually from one to three o'clock at which time there is no opportunity to practice in the mines in powder smoke. In order to practice in deadly gases the Central Safety Committee recommended that a smoke room should be established near each rescue station. The old offices at the Negaunee Mine and near the Princeton Central Power Plant have been fitted up for smoke rooms for these districts. The buildings for the Ishpeming and North Lake districts have been provided but have not yet been fitted up for use. The superintendent of the Republic Mine has decided to fit up one of the many idle buildings found at that place.

It was realized that a uniform compensation should be established for rescue men in time of actual service and the Central Safety Committee recommended that the pay should be $4.00 for a day's work and that 24 hours should represent two days work when on duty. This token of appreciation on the part of the Company was fully appreciated by those employes who participated in the Negaunee Mine fire and was also received with words of commendation by all men who are undergoing training.

Table II.

Showing the number of Helmet and First-Aid Practices and the number of men receiving training by mines during the year.

Mine	Helmet Practices	No. of Men Trained	First-Aid Practices	No. of Men Trained
Athens	0	0	1	3
Chase	11	4	10	6
Cliffs Shaft	11	4	12	8
Gwinn	11	6	11	6
Lake	10	5	12	6
Maas	7	6	9	6
Mackinaw-Gardner	0	0	7	6
Negaunee	11	8	12	5
North Lake	12	5	12	5
Princeton	8	3	1	3
Republic	6	5	5	5
Salisbury	7	6	9	5
Stephenson	11	5	11	8
Engineers	2	7	0	0
Contest Teams	0	0	25	20
Total	107	64	137	92

Table III.

Showing Occupation and Nationality of Mine Rescue and First-Aid Men now in the Company's Employment.

Occupation	Helmet	First-Aid
Mining Captain	1	1
Mine Foreman	2	2
Shift Boss	19	27
Miner	17	27
Timbermen	4	4
Trackmen	3	3
Sampler	0	4
Electrician	3	6
Motorman	0	2
Cage Rider	2	2
Underground Laborer	1	4
Machinist	0	3
Blacksmith	0	4
Chemist	0	1
Clerk	0	4
Pipeman	3	4
Pumpman	1	3
Skip Tender	1	2
Mine Mechanic	0	1
Surface Foreman	0	6
" Laborer	2	7
Engine-house Man	0	1
Total	59	118

Nationality	Helmet	First-Aid
English	33	60
Scandinavian	8	21
Finnish	8	7
French	2	12
Italian	5	6
German	1	3
Irish	0	2
Austrian	1	2
American	1	5
Total	59	118

FIRST AID TO THE INJURED.

Actual Work.

The accident reports show that 198 injuries received first-aid treatment last year. Slight injuries are constantly being received by our employes which do not cause a loss of time and are not reported but such injuries are usually treated by our first-aid men. About two-thirds of the accidents reported as not receiving first-aid were of such a nature that first-aid treatment was unnecessary. Only an approximate estimate can be made of the number of injuries that failed to receive treatment and this is determined by the description of the injuries reported. We have estimated this number to be about fifty. More accurate figures should be obtainable hereafter as foremen are gradually making the Accident Reports more complete by answering all of the questions which are embodied in it.

The importance of this work may be shown by citing a few of the serious accidents that occurred during the past year and which received treatment. The time should not be far distant when every workman who

suffers an injury will receive prompt and efficient first-aid treatment.

Mine	Name	Occupation	Nature of Injury
Lake	Thos. Lucas	Shift Boss	Fracture of leg.
Republic	Edmund Durant	Miner	Fracture of leg, bone nearly through flesh.
Stephenson	Dallo Carlo	"	Dislocation of wrist, end of bone fractured.
North Lake	Wilfred Hegman	"	Burnt about face and eyes.
Republic	John Kneebone	Foreman	Electric shock, revived by hand method of artificial respiration.
Gwinn	Aug. Fagerberg	Captain	Fracture of upper arm.
Cliffs Shaft	Two workmen	Miners	Overcome by gas, revived by Lungmotor.
Chase	" "	"	Overcome by gas, revived by Pulmotor.
Lake	One "	Miner	" " " " "
Salisbury	" "	"	" " " " "

Equipment.

A Red Cross first-aid cabinet is kept in each mine ambulance room. First-aid men carry with them when working dressings, hermetically sealed, for serious wounds, and smaller bandages for minor injuries. There has been a number of finger infections that were caused by workmen remaining at work after receiving slight cuts or buises, and to lessen this danger it was suggested that leather finger protectors be used. These will be at the disposal of our men as soon as a suitable kind can be purchased. Hot water bottles have been added to the first-aid equipment of each mine. A toboggan stretcher for conveying injured men down raises, stopes, etc., has been perfected and one for each mine is being made at the Hard Ore shops.

The value of a mechanical appliance for resuscitating an unconscious person is not granted by all authorities. The Bureau of Mines has discontinued recommending its use, preferring to rely upon manual methods. The lungmotor and pulmotor, the two resuscitating apparatus now in use, have each its own record of lives saved and its own adherents, but as it is

the policy of the Company to maintain the best equipment possible, both apparatus have been purchased and in order to avoid duplication they are placed at different mines.

Training.

New teams of five members were organized but all of them were not continued in training the entire year due to the closing down or reduction in forces at several mines. A member of the 1913 team of each mine was made a member of the new team in order to assist in training during the absence of the first-aid foreman. Frequently the teams are disposed to practice when at leisure and it is found that without a member to take the initiative very little progress could be made. There were 137 practice periods, which were attended by 92 men, of whom 22 were new men who received a complete course and will be given first-aid certificates and the Company's souvenir watch fob.

The Lake Superior Mining Institute held a first-aid contest at Ishpeming, August 31st, in connection with its annual meeting. Teams from the Maas, Negaunee, Lake and Gwinn mines represented the Cleveland-Cliffs Iron Company. Special training was given to these teams, both on the Company's time and their own, under the supervision of Mr. Williams, Mr. C. S. Stevenson and the Safety Inspector. The Negaunee Mine team won second place in the contest and the Maas Mine team was tied with two other teams for third place. The Institute has announced that this feature will be an annual event. That our men are very much interested in contests of this nature is apparent by several teams now practicing monthly, during their leisure, to qualify for the privilege of representing this Company in the next contest.

SAFETY INSPECTION.

It is the practice to submit safety inspection reports of each mine monthly or twelve annually; two by foremen committees, two by workmen committees and eight by the Safety Inspector. These reports were all that were submitted last year, as there were no inspections made by special committees. The report of the special committee on Mechanical Appliances, which was made in 1913, was approved by the Agent and early in the year the recommendations embodied in it were started.

Among the visitors who inspected the Company's mines from a safety standpoint were Dr. Robert Olsen, connected with the Government Health Service, Mr. C. A. Mitke, Ventilating Engineer of Phelps, Dodge & Co., and Mr. Manji Yoshimura, Chief Inspector of Mines for Japan. These visitors appeared to be very favorably impressed with our safety and welfare work and they had no suggestions to offer whereby they thought improvement might be made.

Foremen Committees.

The large number of shift bosses employed by the Company make it possible to appoint men to serve on foremen's committees who have not previously worked in this capacity and this will hold true for several years to come. The committees are appointed by the Central Safety Committee. The first committee last year consisted of Thos. Easterbrook of the Maas Mine, Angelo Galiazzi of the Stephenson Mine and Wm. Tippett of the Morris-Lloyd, and its tour of inspection was made from March 30th to April 12th. On the second committee, which inspected the mines Sept. 21st to Sept. 29th, were Fred Prudom of the Salisbury Mine, John Frederickson of the Negaunee Mine and Peter Pascoe of the Republic Mine.

Workmen Committees.

The members of these committees are appointed by the mining captains. It is the practice to select for each new committee workmen of different nationalities, who have not served previously in this capacity. After a foremen's committee has completed its tour the mines are inspected by the safety inspector before the workmen committees are started, thus allowing ample time to comply with the recommendations, which may have been offered by a foremen's committee, before the workmen get around to discover the same danger. The mines were inspected by workmen committees early in June and also the latter part of November. The following table gives the number of shift bosses and workmen by mines who have served on safety committees since the beginning of safety work.

Table IV.

Mine	Shift Boss	Workman
Austin	1	12
Chase	1	15
Cliffs Shaft	2	21
Gardner-Mackinaw	0	3
Lake	2	21
Maas	3	12
Morris-Lloyd	2	21
Negaunee	3	21
Princeton	1	9
Republic	1	3
Salisbury	3	18
Stephenson	2	21
Gwinn	0	12
Total,	21	189

Central Safety Committee.

The membership of this committee was increased by the appointment of two new members, Supt. Bush and Mr. C. S. Stevenson, Director of the Educational Department. The committee held one session each month of the year.

GENERAL SAFETY PRECAUTIONS.

Book of Safety Rules.

A second edition of safety rules in the Finnish and Italian languages of 1000 copies each were printed last spring. The new rules and the changes made by revising several old rules were incorporated in the new books.

Admonitions.

Safety admonitions printed on cards have been distributed bi-monthly to all workmen, along with due bills. This innovation was started by distributing brief statements calling attention to what the Company is endeavoring to accomplish for its employes in providing and maintaining safety and solicitating the interest and co-operation of employes themselves in this direction.

Safety Cigars.

The distribution of safety cigars was continued throughout the year by recommendation of the Central Safety Committee. All of our employes are aware of this monthly award and inquiries are constantly heard as to

the next possible winner. The mines winning first place were Lake Mine, three times; Salisbury, Chase and Gardner-Mackinaw Mines, twice; and the Athens, Maas and Morris-Lloyd mines, once each.

Bulletin Boards.

It was decided to place Safety Bulletin Boards in a permanent place at each mine in which all matters of safety may be posted where they will command attention and not suffer wanton destruction. These boards have enameled borders upon which the name of the Company and a safety slogan are printed. Many attractive safety placards, pictures, admonitions, etc. are being received monthly from the National Council for Industrial Safety and the American Mine Safety Association and other firms, which will be placed in the bulletin boards, together with our own statistical information and placards.

Safety Address.

One of the most important factors in the work of accident prevention is that of getting our foremen's hearty co-operation with the movement. Our shift bosses are the men who are constantly "on the job", and their attitude to our safety measures and their relationship with the workmen must be in harmony with the policy of the Company in order to achieve the best results possible. Early in the year it was unanimously agreed by the members of the Central Safety Committee that a safety talk by the Agent to the bosses would be a very effective method to stimulate their interest, and at the March meeting of the Mining Club, which was attended by most of our bosses, Mr. Duncan gave an address which commanded the thoughtful attention of all present. That it had the desired effect became apparent later on to the safety inspector who, when touring the mines, observed that many of the bosses, who hitherto had been somewhat lax in their efforts to enforce the safety rules, exhibited more careful attention to matters of this kind.

Guards on Tram Cars.

An accident of frequent occurrence is one that is caused by trammers having their fingers caught between the top of tram cars and the edge of chutes or else by chunks of ore being pushed back from the top of the

cars, when they are pushed under the chutes. To prevent accidents of this nature a strip of iron is placed across the edge of car under which trammers may place their hands while pushing cars. This device has been recommended by the Central Safety Committee for all tram cars on main and sublevels where tramming under chutes and crushing timber is necessary.

Signals.

The uniform bell signal code has been printed in enamel iron and as soon as the copies of the old form become poor they are being replaced by the new form. The old form, which was printed on paper and posted in a frame with a glass shield, was about as expensive as the code in enamel and was much less presentable and durable.

Telephones at mine stations have become almost indispensible. It was decided that a signal code, in large type, should be posted at each telephone.

Pump Stations.

The Agent, at one of the meetings of the Central Safety Committee, announced that pump stations must be made fire-proof. This rule has been enforced at all mines.

Derail Device.

From time to time events have occurred which indicated that the derail device in tunnels and at shaft stations might not be the means of preventing the occurrence of a serious accident. A committee was appointed to investigate and to submit a safety device that would prove effective. It recommended a heavy obstruction that would have to be held free from the track when ~~the~~ a train was permitted to approach the shaft compartment and one that would return automatically. This device has been adopted.

Underground Lighting.

Carbide has replaced candles for underground lighting. Its proper distribution was the subject of much discussion and was finally settled by placing it in charge of the dryman and by alotting each workman a sufficient amount to last during a day's work. Cans for storing waste have been placed in convenient places in the mines and near the collar of shafts.

SAFETY MEASURES BY MINES.

Athens.

At this mine, where shaft sinking is in progress, a cage is used in place of a bucket, probably the first time in the history of mining in the Lake Superior district. As the cage is hoisted from the bottom of the shaft it is engaged into the runners by ropes, which eliminate any possibility of missing the runners. This device works very safely and removes that danger which is always constant where a bucket and a crosshead are used. The collar of the shaft is protected by a gate, which is automatically raised by the cage as it approaches surface and is returned to position again when the cage descends.

The moving machinery in the engine house has been equipped with guards in accordance with the standard specifications adopted at all mines. The ladders to pulley stands and sheaves in headframe have not yet been equipped with casing to prevent oiler from falling.

Five accidents occurred at the Athens Mine, one fatality and three of the remaining four receiving compensation payments. No two accidents resulted from a similar cause. Three of the five accidents resulted under conditions which were brought forth by new methods of operation.

Chase.

The most serious accidents at the Chase Mine occurred to trammers working on main level drifts. Fifteen employes were injured during the year of whom eight were trammers, and of six who received compensation payments five were trammers. The ore lenses are mined by shrinkage stopes and the trammers have to tram ore that is frequently very chunky. Cars are pushed very rapidly towards the shaft and, as the chutes hang low in the drifts, there is danger of coming in contact with them and also of having chunks on top of the cars pushed back upon their fingers. The safety device previously mentioned will eliminate accidents by these causes providing, of course, the trammers take care to place their hands under the guards.

The drawing of ore from one of the stopes removed the second passageway from the lower levels to surface and a second ladderway was provided when attention was called to the rule which requires the connection of all levels other than through the shaft. It was observed that in the stope nearest to the surface drift that the back had been dripping and as soon as mining was completed there all openings were securely bulkheaded, thus providing protection against a run of sand and water, if the back should ultimately break through ~~xxxxxxx~~ to the overburden. The iron formation in the Chase Mine is very tough and seldom causes trouble by breaking away, which conditions has made it possible to mine more ore than could have been mined otherwise. In this instance, however, the back appeared to be composed of dike rock, which is softer and yields to exposure.

The old Dexter mine was unwatered and explored without a personal injury being reported. Bucket riding was prohibited and a ladder-road in safe condition was maintained at all times.

In the engine house a shield was placed under the compressor belt to protect workmen when passing beneath it and the ladders to sheaves in headframe were equipped with casing.

Cliffs Shaft.

The working conditions in the Cliffs Shaft mine vary but little. The protection of stopes and raises and the trimming of backs are the most important safety precautions under general mining. There was but one serious accident during the year by fall of ground, which proves that the foremen are giving this work careful attention. The protection of open stopes and raises has been fairly well watched although occasionally a stope or raise may be found unprotected.

Underground sanitation is somewhat better than last year as the closets are usually taken to surface once a month and renovated. At the Republic Mine two men are employed whose duty it is to see that all toilets are taken to surface every week and thoroughly cleaned. These men, up to the present time, have done little else but this work but it is the opinion of the superintendent that while it has represented an expenditure of $1200.00

a year the underground sanitation has been kept free from contamination and that the price is worth while. He has decided that the work shall be maintained but the cost will be materially reduced by placing additional duties upon these men. The members of the last foremen's committee, after inspecting both mines, felt that an effort should be made to maintain underground sanitation to the degree found in the Republic Mine.

The following safety devices on surface were adopted during the year:

Screen shields around fly wheel of compressor in engine house, around fly wheel of main drive in crusher.

Hoods over eccentric of compressor.

Safe passageways to eccentric oil cups and over vacuum pump.

Improved passageway from the economizer to counter shaft.

Toe board on runway over boiler.

Belting and pulley guards in crusher and shops standardized.

Bottom of stairway from crusher guarded off to prevent walking directly onto tracks.

There were 47 accidents of which 18 received compensation payments. The most serious accident caused a loss of 46 days. Accidents by chunks rolling down piles and by chunks breaking when being lifted into cars are the most common. The bosses are warning trammers to keep dirt piles trimmed but no method is known whereby accidents can be avoided by catching fingers when lifting heavy chunks into cars.

Gardner-Mackinaw.

Shaft sinking was in process at these two mines during the major portion of the year. Each shaft was equipped with safety crossheads and with two doors, one in the tunnel and the other at the top tram. Both doors were closed when buckets were dumped, and when tools were being placed in the bucket the lower door sealed the shaft, making it impossible for material to fall upon the workmen below. All employes were prohibited from riding on the edge of bucket or on the crosshead.

The moving machinery in both engine houses was equipped with safeguards which comply with approved standards. The casing of ladderways to pulley stands and top sheaves had not been taken up at the time the shafts were stopped.

Six accidents occurred at these shafts, one receiving compensation, which was caused by a workman slipping against the bucket and fracturing a rib. This accident caused a loss of 30 days.

Gwinn.

All underground electric wires are carried in conduit, thus making the mine absolutely safe from fire in this respect. There is no underground haulage but as there are many crosscuts from the orebody to the main drifts on the 6th and 7th levels, lights are stationed at the intersections to avoid collisions by tram cars. The main drifts are being driven close to the footwall, where there will be little if any crushing, at least for several years to come, thus the placing of electric lights in conduit is practical, at least in one instance.

There have been violations of the rules for the handling of powder but development work has advanced to a stage which now affords ample room for the safe storage of powder and detonator supplies. The Gwinn is the only mine operated by the Company in which there is no second outlet and it will probably be several years before one can be provided. A rule of the Company reads, "Two openings to surface are provided by law except in the case of mines that are being opened". The State mining laws have been examined very carefully but no such law can be found.

Both hoists in engine house are equipped with overwinding devices, gears have been guarded to meshing point and rails have been placed around brakeweights. A screen to prevent outsiders from getting to electric switches, and guard rails, blocking passageways around front entrances to hoists, have been erected. Stairways have been built to replace ladders to pulley stands and the ladderway to top sheaves in headframe is equipped with casing.

Of 34 accidents occurring to Gwin mine employes, 13 received compensation. The most serious one caused a loss of three and a half months.

An examination of these accidents show that the causes are very diversified and no specific recommendations have been made other than the general recommendations which apply to all mines.

Several timber stopes have been developed in the mine without causing any accidents but the opinion has been frequently expressed that this method of mining entails more risk than mining by the top slicing or caving method. It can be readily seen that if stopes were to be mined adjacent to the stopes already opened, the work is apt to be hazardous. It has been very remarkable that workmen in handling the big timbers that have been used in these stopes have so far avoided injury.

Lake.

The most important safety measure that has been undertaken by the Company, in the opinion of the safety inspector, is the installation of a fan in the Lake mine to improve the underground ventilation. When this shall have been accomplished the Company has adopted every recommendation, possible in a practical way, that has been presented during the past four years to provide safety in and about the mines. Better ventilation may not reduce the cost of ore per ton but it will surely add length of days to the lives of many of the miners working in this mine. So long as the air remains poor disgruntled workmen can use it as an effective weapon to create discontent among their fellow-workmen, who otherwise feel well disposed toward the Company. To reduce the temperature and humidity it is intended to increase the volume of fresh air entering the mine three times the present amount and to direct it into the upper workings of the mine. A raise is being put up to surface on the south side of the mine and a large suction fan is being installed near the third level station. Air chambers are being built on the main levels and a number of small fans will be placed on the sub-levels to fan air to the top subs.

The end of mining ore above the third level came and in order to maintain the usual daily output from lower levels hoisting was begun as soon as men were being lowered into the mine. This was a proceedure which brought forth criticism, and it was investigated by a special committee appointed

by the Agent. This committee reported that the handling of men when the skips were in rapid motion could be avoided by hoisting ore only when the cage was being returned to surface. This plan is being followed.

There have been a number of safety devices constructed for surface appliances, which are herewith outlined:

Shields around compressor cranks, eccentrics, gears and skip and cage hoists.

Shields around coal hoist and a permanent passageway to sheaves in coal hoist room.

Ladders to pulleys and sheaves cased.

Safe passageway to skip dump.

New hot and cold water line laid to change room.

There were 45 accidents and of this number 26 received compensation. The most serious were losses of an eye and a finger phalanx, a fractured leg and a bruised foot.

Maas.

The Maas mine had a very unfortunate record this year. The most serious accidents were caused by falls of ground and a run of sand and water. These accidents resulted from conditions which arose by mining a body of ore that lies under a heavy overburden of drift and one that dips at such an angle so as to make each new sub-level develop a new hanging wall. This hanging wall is found very frequently to be hard and when it gives way it breaks off in large masses which fall with a destructive force. The run of water and sand was the first occurrence of its kind and in this instance it came in through an adjacent Negaunee mine opening. To insure as much safety as possible it was decided to use larger timber and to place sets closer together. Furthermore, workmen were not permitted to expose themselves to danger by removing ore from open places.

There was considerable movement of ground from the first level up to the top subs, which threatened for a time to destroy the main haulage road. After it subsided and it was safe to resume mining it was deemed wise not to mine ore beneath the first level until most of the ore above this level had been removed, consequently, since the run of sand last March until the mine was closed in the fall, no ore was mined between the first

and second levels.

During the year the plats and main level drifts were cleaned of old timber and mud, making a much more favorable impression upon one inspecting the mine and providing a better passageway for employes when enroute to their working places. When haulage drifts are well lighted but are not kept clean they give an impression of untidiness that is not in harmony with the safety movement. Both the Maas and the Negaunee mine main drifts, prior to last year, were in bad condition with this respect. There was a reason for this condition in the Negaunee mine, where runs of sand were of frequent and regular occurrence; but the cleaning of the drifts and the construction of a plank gangway has been accepted by underground employes with a hearty approval that has found frequent expression. The drift connecting the two mines has been placed in safe condition and a heavy iron door, with concrete connections to the surrounding rock, has been put in, making it air tight and providing a means of controlling smoke or gas in either direction in time of fire. Since the mine has been idle the ladderway in shaft was overhauled and for the first time since the shaft was concreted from surface to ledge this passageway is in safe condition.

An electric "Safety First" sign was placed in the tunnel, near entrance to cage compartment, as a reminder to workmen before descending into the mine that safety first is the policy of the Company. Similar signs have been erected at the Negaunee and Cliffs Shaft mines. There has been quite a number of improvements made to surface equipment, such as placing shields over gears and guards around moving machinery in transfer, boiler and engine houses.

Negaunee.

The cessation of runs of sand in the Negaunee mine has afforded an opportunity to place the mine in a respectable appearing shape - which hitherto had not been possible and the officers of the mine have availed themselves of the opportunity. Although the ore body is crushing very heavily general conditions in the mine are fast approaching the ideal, as

near as that can be expected to be found in an iron ore mine of this size. The most important changes noted the past year have been the placing of plank passageways in haulage drifts, the removing of the sand and mud that had accumulated therein, the stopping of the steam pumps and the gradual uniform working conditions being attained by the gaining of a safe mat where the ore body is crushing and the elimination, one by one, of the old stopes.

The entire caved surface area has been enclosed with a barbwire fence. Ladders to pulleys and sheaves have been cased and the circular saw in carpenter shop has been equipped with a hood.

There were 34 accidents reported. Of this number, besides two fatalities, there were 23 injuries demanding compensation awards. There were foud accidents that entailed a serious loss of time, all being injuries to fingers resulting from dissimilar causes.

Republic Mine.

When the Republic Mine was taken over it was believed that few safety devices would be found necessary to install, but such was far from being the case. The following is a list of the principal safety devices that have been adopted or are being installed:

Equipping moving machinery and belting in shops, boiler, engine and crusher buildings, with shields and guard rails.

Constructing new ladder-roads to all surface pulley stands.

Railings and signs along dangerous places on highways.

Electric lights on top of boiler plant.

Repairing of fences around caves, pits and abandoned shafts.

Overhauling ladderway in No. 9 shaft.

Protection and lighting of shaft stations.

Equipping cage with doors, side casing and hand grips.

Protection of moving machinery in pump stations.

Better ladderways in raises.

Testing and inspection of ropes and cages.

Establishment of Mine Rescue Equipment.

Since May 1st, 61 accidents were reported, 23 receiving compensa-

tion. One fatality and the two most serious accidents were caused by falls of ground.

Salisbury.

The accident record of this mine for the past four years was marred by a double fatality which occurred March the 4th. This accident occurred by a fall of ground and gave rumors to the effect that the unfortunate men who met their death were engaged in cutting or removing the timber of the drift which closed in upon them. It was decided to reopen the drift. The falling material came so readily that it was impossible to remove the debris intact, hence no timber could be ascertained as to what was actually being done at the time of the accident. Two tools were found just inside of where the bodies were recovered, an axe and a bar.

It was decided that it was unnecessary for workmen to endeavor to save timber or to cut timber bearing weight when blasting the working place together. Both practices were stopped and all contracts must be equipped with augers to bore holes into timber when preparing them for blasting.

A fan has been placed in the rock drift to keep it free of gas and smoke. The shaft has been overhauled from surface to the bottom level. A new ladderway has been constructed from the edge of the pit to the collar of the shaft and the old one discarded. Cars on the top tram were fitted with a foot rest to prevent workmen from injury by contact with the spools in track for guiding rope.

There were 21 accidents and besides the two fatalities there were four which received compensation, the most serious causing a loss of one and a half months.

Stephenson.

The accident rate of the Stephenson mine is usually the highest of all the Company's mines but it now yields this undesirable position to our latest addition, the Republic Mine. The majority of accidents, however, have been comparatively slight ones and the total number of working days lost annually thereby has been below the average for all mines. There were

72 accidents reported last year, 26 receiving compensation, of which but two were serious accidents. An employe received a broken arm on the top tram, another one a broken leg by a fall of ground.

Many accidents occurred to top tram workmen. The wet ore causes much difficulty in handling and although this problem has been given constant attention by the mine officials it has been impossible to eliminate danger. Since the beginning of the new year and the time of writing this report, two accidents have occurred there, thus keeping up the record which characterizes this work, namely the most hazardous occupation to be found in and around our mines.

There were no new safety devices for underground operations. On surface, stairway were constructed to pulley and sheave stands in place of the casing which is used at other mines. Moving machinery in engine house, and Central Power Plant were guarded in accordance with the recommendations of the special committee on Mechanical Appliances.

Morris-Lloyd.

The amount of development work being done at this mine surpasses that of any other of the Company's mines. As a general rule work of this kind is regarded as more dangerous than that of general mining. Although the accident rate was high there were comparatively few serious accidents. Of 62 accidents there were 15 that called for compensation.

The top of the Morris ore body has been opened and the caving system is well under way, thus affording a safe gob for future mining. The raises of the sub-levels are high but the timber slides are placed beneath the ladders so that the passageway can be kept in safe condition. Automatic couplers were introduced to test their practicability and they have been found to work very satisfactorily. When the iron market is more propitious it is very likely that they will be installed in all mines where haulage is the method of transporting ore. A winze is being sunk, adjacent to the Morris shaft, and all the special safety requirements governing this work have been adopted. Ventilation at the breasts of long drifts has been kept in a sanitary condition by the operation of a fan. At the end of the

4th level drift a raise is up over 400 feet to surface and a shaft has been started recently from surface to meet this raise. Raises in dry rock produces an atmosphere of dust which is very injurious to the health of employes. A breathing device for protection against inhaling dust has been provided for the miners working in dry raises, and on recommendation it was also provided for the Negaunee Mine, where similar conditions exist.

The following devices on surface equipment were constructed during the year:-

More ample protection around gears of hoist.

Safe passageway to compressor oil cups.

Belting across overhead gangway guarded off.

Gears and ropes in top tram transfer placed within shields.

Ladders of pulley stands in top sheaves cased.

Passageways to sheaves between trestles constructed.

Guards across edges of trestles to prevent stray pieces falling below.

ACCIDENTS.

Fatal.

The first few weeks of 1914 did not begin the year very auspiciously. From Jan. 11th to March the 4th, a period of 52 days, eight men were killed, of whom, four met death by falls of ground in double fatalities, two by mine fire, one by run of sand and one by an object falling down shaft. It has been said that so many fatal accidents in so short a period never occurred before in the history of the Company but this statement is not true. From March 4th to the close of the year two more fatalities occurred, both at new properties, one in the Athens shaft and the other in the Republic mine. There were employed in 1914 an average of 2,435 men, thus giving a fatality rate of 4.10 per 1000 men employed.

Eight of the ten accidents were classified by the Central Safety Committee as non-preventable accidents. For two years, 1911 and 1912, we suffered a total of nine fatalities, and of this number but two were classi-

fied as preventable. These facts compased with the record of last year show that the element of chance is an underterminative factor in the causation of mine accidents. A year of few, or even no fatalities, may be followed by a year of many accidents, such as characterized the early part of last year. It is only by comparing periods of several years that any value can be attached to a comparative figure and reliable data be deducted. There were maximum and minimum rates before the inauguration of safety work and similar rates will logically follow in the wake of safety work. However the mean average rate for a reasonable period prior to safety work compared with the average for the same length of time after safety work should make a comparison favorable for the latter period. That this holds true for our work is indicated in the table which follows.

Table V.

Showing classification of fatal accidents, etc. for four years prior to safety work and also for four years of safety work.

	Trade Risk	Negligence of Company	Negligence of Workmen	Total
1907	4	0	13	17
1908	3	2	1	6
1909	8	1	4	13
1910	6	5	8	19
Total	21	8	26	55
1911	2	1	2	5
1912	0	3	1	4
1913	3	1	7	11
1914	8	0	2	10
Total	13	5	12	30

	1907-1910	1911-1914
Accident rate per 1000 Employes	5.45	2.99
Tons ore mined per fatal Accident	174,383	275,581

Table VI.

Comparison of Fatality Rates for Coal Mines, Metal Mines, etc.

	1911	1912	1913	1914	Average
U. S. Coal Mines	3.73	3.27	3.82		3.60
U. S. Metal Mines	4.45	4.09	3.72		4.08
Minnesota Metal Mines	4.59	3.15	4.16		3.96
Michigan Metal Mines	4.24	3.22	3.12		3.52
Marquette County Mines*	5.42	3.32	2.46	5.00	4.05
Cleveland-Cliffs Iron Co. Mines	1.86	1.77	4.20	4.10	2.98

*Exclusive of Cleveland-Cliffs Iron Company

Non-Fatal.

The total number of non-fatal accidents reported last year, including Crosby mine, is 443, compared to 510 for the previous year. The total number which received compensation payments, including fatalities, was 171 last year and 201 the previous year.

In the report of the Safety Department for 1913 it was shown that the number of accidents for that year had increased very materially. Although the number of accidents, which occurred that year, were more than for either of the two previous years, yet a study of the following tables will show that our fatality rates for 1911, 1912, 1913 and 1914 compare very favorably with those of other mining companies in Michigan and Minnesota. It will be observed also that of the non-fatal accidents reported in 1913 the increased number is in the slight ones and that the rate for serious ones is somewhat less than for 1912. The increase number is due undoubtedly to the fact that that year was the first entire year under the State Workmen's Compensation law, which has resulted in the reporting of many slight accidents which formerly were regarded as too insignificant to report. We still have a considerable reduction to make to be as low as the average rate for all the metal mines in the country so far as serious accidents are concerned, but rates for fatalities and slight accidents are below that of all metal mines.

Table VII.

Table showing number of accidents reported to state 1913 and 1914 and rate per 1000 men employed.

Mine	Number Reported to State 1913	Number Reported to State 1914	Rate per 1000 Men Employed 1913	Rate per 1000 Men Employed 1914
Athens	1	5	130	156
Chase	15	15	224	181
Cliffs Shaft	78	49	267	164
Gardner-Mackinaw		6		159
Gwinn	4	34	80	250
Lake	82	45	239	183
Maas	35	22	130	98
Morris-Lloyd	43	62	221	243
Negaunee	53	35	148	113
Republic		61		344
Salisbury	27	21	182	178
Stephenson	124	72	378	255
Misc. Mines	52	16	190	80
Total	514	443	Average 195	182

Table VIII.

Table showing number who received compensation payments and rate per 1000 men employed for 1913 and 1914.

Mine	Received Compensation 1913	1914	Rate per 1000 Employed 1913	1914
Athens	1	4	130	125
Chase	7	6	104	88
Cliffs Shaft	32	17	112	52
Gardner-Mackinaw		1		25
Gwinn	1	13	20	95
Lake	37	26	110	105
Maas	16	14	58	62
Morris-Lloyd	19	15	98	58
Negaunee	17	25	48	80
Republic		23		130
Salisbury	12	6	81	50
Stephenson	37	26	121	92
Misc. Mines	23	3	85	12
Total	201	179	Average 80	82

Table IX.

Comparison of rates of metal mines, etc. for serious and slight accidents per 1000 men employed.

	Serious				Slight			
	1911	1912	1913	1914	1911	1912	1913	1914
U. S. Metal Mines	26.71	27.85	32.09		143.56	162.26	147.54	
Minn. Metal Mines	68.35	51.75	78.91		305.72	224.79	240.34	
Mich. Metal Mines	40.15	41.16	50.95		192.63	229.73	197.35	
C. C. I. Co.	43.67	49.66	48.11	41.50	74.70	123.34	145.78	140.04

Table X.

Record of Fatal Accidents.

Nos. 1 & 2. January 11th, Negaunee Mine, John Beebe, pumpman, John Barrett, night captain, by mine fire. Classified as trade risk.

No. 3. February 12th, Morris-Lloyd Mine, John Piiperen, shaftman, by short plank falling down shaft. Classified as carelessness on part of workmen.

Nos. 4 & 5. February 14th, Maas Mine, Mike Stefanelli and Peter Allen, miners, by fall of ground. Classified as trade risk.

No. 6. March 2nd, Maas Mine, John Yukala, miner, by a run of sand. Classified as trade risk.

Nos. 7 & 8. March 4th, Salisbury Mine, Jonas Frost and John Frost, miners, by fall of ground. Classified as trade risk.

No. 9. August 14th, Athens Mine, Oscar Larson, miner, by being pulled up shaft with hose which caught in cage and falling away when hose became disengaged. Classified as carelessness on part of workman.

No. 10. October 14th, Republic Mine, Peter Kostomo, miner by fall of ground. Classified as trade risk.

Table XI.

COST STATEMENT.

Salaries and Wages.

Safety Inspection		First Aid and Rescue		Clerical		
Safety Inspector	$2164.60	Foreman	$1180.00	Clerk	$594.00	
Foremen Committees	203.70	Rescue Teams	385.00			
Workmen "	98.80	First-Aid Teams	284.08			
	2467.10		1849.08		594.00	$4910.18

Travelling Expenses.

(A) Safety Inspection.

	Travelling	Hotels	Livery	
Safety Inspector	$136.51	$45.50	$66.73	
Foremen Committees	57.95	17.00	9.50	
Committee on Fatal Accidents			5.50	
	$194.46	62.50	81.73	

(B) First Aid and Mine Rescue.

	Travelling	Hotels	Livery	
Rescue Foreman	$52.12	$63.50	$143.63	
First Aid Teams	38.71		10.00	
	$90.83	63.50	153.63	646.65

Supplies.

Safety Inspection		First Aid and Rescue		Mine Charges		
Finnish & Italian Safety Rules	$211.68	First Aid Supplies	$111.23			
Safety Cigars	154.15	Rescue "	95.52			
Central Safety Committee Lunches, etc.	117.60	Watch Fobs	72.75			
Psychrometer, Anemometer, etc.	51.26	Telephones	14.00			
Admonition Cards	23.55	Miscellaneous	23.53			
Accident Charts	24.00					
Clothes for Committee on Fatal Accidents	16.15					
Telephone	24.00					
Printing, magazines, office expenses, etc.	34.47					
	$656.86		317.03	523.08		1496.49
				Grand Total		$7053.80

Table XII.

CLASSIFICATION OF CAUSES OF FATAL ACCIDENTS

FOR 1911, 1912, 1913 AND 1914.

		1911	1912	1913	1914	
A. Fall of Ground.						
1. By fall from back or side(drift, raise or stope)		1	0	7	5	
4. By run of mud or sand		0	0	0	1	
	Total	1	0	7	6	14
B. Shaft Accidents.						
1. By falling down shaft		1	1	0	1	
2. By timber or rock falling down shaft		0	0	0	1	
3. By being caught or struck by cage, skip, bucket or tool		0	1	0	0	
	Total	1	2	0	2	5
C. Use of Explosives.						
1. By explosion of powder at working face		0	0	1	0	
	Total	0	0	1	0	1
D. Mine and Railroad Cars.						
1. By being run over by haulage car		0	1	2	0	
4. By being run over by railroad car		1	0	0	0	
	Total	1	1	2	0	4
E. Miscellaneous Causes.						
1. By falling from ladder		1	0	0	0	
2. By contact with electric wire		0	0	1	0	
6. By asphyxiation due to mine fire		1	0	0	2	
8. By falling from staging		0	1	0	0	
	Total	2	1	1	2	6
					Grand total	30

Table XIII.

CLASSIFICATION OF CAUSES OF FATAL ACCIDENTS

FROM DEC. 1ST, 1898 TO JAN. 1ST, 1915.

A. Fall of Ground or Timber.			
1. By fall from back or side(drift, raise or stope)		52	
2. By fall of chunk from chute		1	
3. By fall of stray chunk down		1	
4. By run of mud or sand		6	
	Total		60
B. Shaft Accidents.			
1. By falling down shaft		8	
2. By rock or timber falling down shaft		3	
3. By being struck or caught by cage, skip, bucket or tool		5	
4. By falling from cage, skip or bucket		4	
5. By falling from ladder in shaft		6	
6. By being carried or pushed into shaft by car		3	
7. By attempting to jump on or off cage, skip or bucket		3	
8. By being struck by crosshead		5	
	Total		37
C. Use of Explosives.			
1. By explosion of powder		13	
2. By premature blast		2	
3. By fall of ground or timber due to blast		3	
4. By being overcome by gas		1	
5. By erysipelas resulting from blast		1	
			20
D. Mine and Railroad Cars.			
1. By being caught by haulage cars		10	
2. By riding or attempting to ride cars		2	
3. By falling with car from trestle		3	
4. By being run over by railroad car		2	
	Total		17
E. Miscellaneous Causes.			
1. By falling down raise		2	
2. By falling from ladder		2	
3. By falling with machine or tripod		2	
4. By being caught under pump rod		2	
5. By supposing to have come in contact with trolley wire		2	
6. By asphyxiation due to mine fire		3	
7. By being pulled into sheave		1	
8. By falling from staging		1	
9. By being ruptured		1	
10. By contact with electric wire		1	
	Total		17
	Grand Total		151

Average percent of accidents by causes.

A. 39.73% B. 24.50% C. 13.24% D. 11.25 E. 11.25%

Table XIV.

Fatal Accident Rates per 1000 Men Employed from 1898 to 1914 Inclusive.

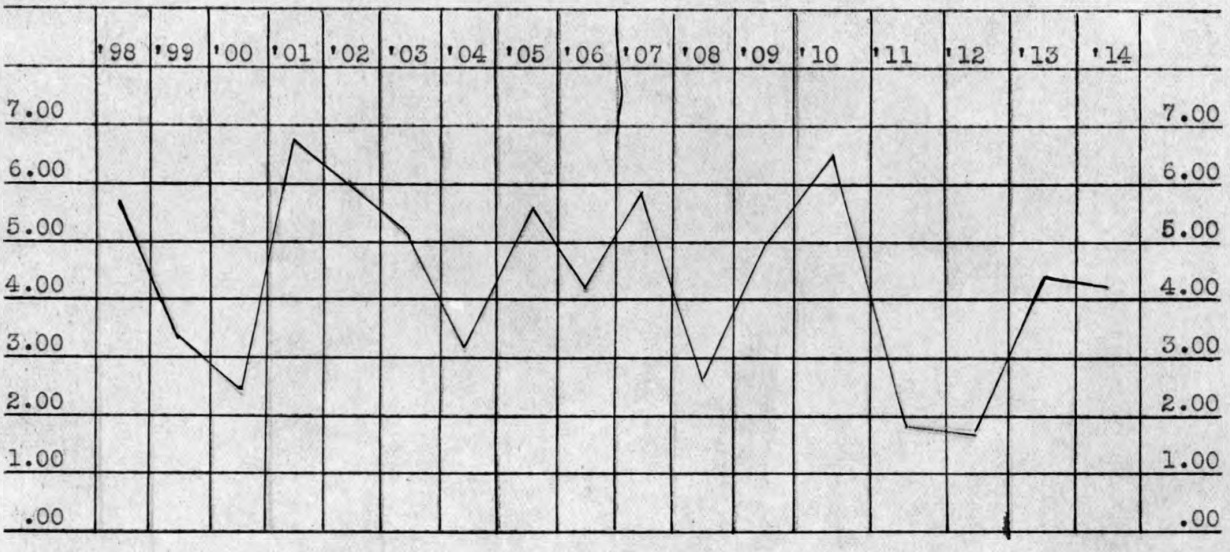


Table XV.

Number of Tons of Ore Mined per Fatal Accident.

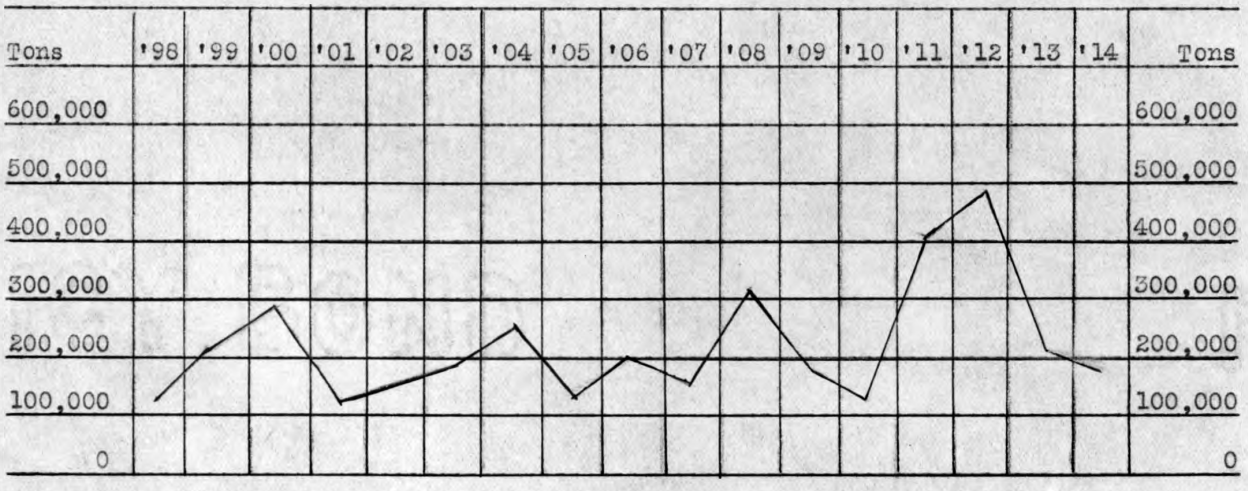


Table XVI.

CLASSIFICATION OF FATAL AND MINOR ACCIDENTS

FOR THE YEAR 1914.

BY THE CENTRAL SAFETY COMMITTEE.

I	TRADE RISKS, (INCIDENTAL & NON-PREVENTABLE)	Total	325
II	NEGLIGENCE OF COMPANY		
	1 Failure to Use Safety Devices Provided		0
	2 Failure to Use Proper Tools or Appliances Provided		0
	3 Violation of Rules		0
	4 Improper Act or Selection of Improper Method of Doing Work. (By Foreman)		0
	5 Failure to Instruct Men as to Method of Doing Work and hazards incident thereto		2
	6 Failure to Provide Safety Devices		2
	7 Failure to Provide Proper Tools, Appliances, or Place to Work		3
		Total	7
III	NEGLIGENCE OF WORKMEN:		
	A INJURED MEN - (1 Failed to Use Safety Devices Provided		5
	(2 Failed to Use Proper Tools or Appliances Provided		4
	(3 Violation of Rules		4
	(4 Improper Act or Selection of Improper Method of Doing Work. (By Workman)		27
	(5 Carelessness. (By Workman)		57
		Total	97
	B OTHER WORKMEN - (1 Failed to Use Safety Devices Provided		0
	(2 Failed to Use Proper Tools or Appliances Provided		0
	(3 Violation of Rules		1
	(4 Improper Act or Selection of Improper Method of Doing Work. (By Workman)		1
	(5 Carelessness. (By Workman)		12
		Total	14
		Grand Total,	443

Table XVII.

CLASSIFICATION OF NON-FATAL ACCIDENTS

A. Fall of Ground or Timber.		
1. By fall from back or side(drift, raise or stope	56	
2. By fall of chunk from chute	18	
3. By fall of stray chunk or stick down raise or stope	3	
4. By run of mud or sand	3	
5. By lagging, sprag or timber falling from back or side	1	
		81
B. Shaft Accidents.		
1. By falling down shaft	6	
3. By being struck or caught by cage, skip, bucket or tool	1	
5. By falling from ladder, sollar or staging in shaft	1	
10. By miscellaneous shaft accidents	2	
		10
C. Use of Explosives.		
1. By explosion of powder	1	
3. By fall of ground or timber due to blast	1	
		2
D. Mine or Railroad Cars.		
1. By being caught between cars or motor and drift	2	
2. By riding or attempting to ride cars	1	
4. By being run over by railroad car or haulage car	1	
5. By cars falling back or off track	1	
6. By falling from car	4	
7. By car running over foot	2	
8. By being struck by car handle, etc.	1	
9. By being struck by motor or car	2	
		14
E. Miscellaneous Causes.		
1. By falling down raise, stope or mill	2	
2. By falling from ladder, trestle or stage, etc.	8	
7. By being pulled into sheave	3	
8. By squeezing finger, hand or foot between car and chute, car and drift, timber and drift, pieces of timber, box and truck, etc.	60	
9. By squeezing finger, hand or foot between chunks or car and chunk	32	
10. By straining or wrenching arm, back or side by lifting, etc.	22	
11. By chunk rolling down dirtpile or stockpile, etc.	26	
12. By being struck by glancing dirt, tool or timber	61	
13. By being accidentally struck by pick, shovel, hammer, etc.	10	
14. By tools or material falling or slipping from hand, staging or platform	19	
15. By running nail into hand, foot or leg	8	
16. By stumbling or slipping causing a fall	26	
17. By catching finger, hand or foot in blocks, gears, brakes, or struck by windlass or parts of machinery, etc.	6	
19. By blood poison or infection from various causes	16	
20. By miscellaneous surface accidents	15	
21. " " underground "	9	
23. By being burnt by acetylene gas	3	
		326
Grand total,		433

ANNUAL REPORT

OF

THE PENSION DEPARTMENT

FOR THE YEAR 1914.

- - - -

PENSION SYSTEM.

The sixth year of the operation of the pension system ended on December 31st, 1914. The work has continued satisfactorily in every way. During the year there have been the following additions to the pension roll:

No. 46	Gust A. Lyman,	Monthly	pension	$15.00
No. 48	Two children of John Tahtinen,	"	"	$14.00
No. 49	Mike Cox,	"	"	$16.91
No. 50	John Ekloff,	"	"	$15.35
No. 51	Dennis Coron,	"	"	$15.00
No. 52	William Cooney,	"	"	$18.20
No. 53	Carl Bergman,	"	"	$16.97
No. 54	James H. Williams,	"	"	$25.41
No. 55	Eric J. Hammer,	"	"	$15.00
No. 56	Frederick Sandberg,	"	"	$15.00
No. 57	Fred LaBreche,	"	"	$22.38

The following pensions ceased during the year:

No. 1	John Barry,	Died August 5th, 1914.
No. 8	Hilma Mattila,	End of five year period December 31st, 1914.
No. 22	Peter A. Anderson,	Died November 30th, 1914.
No. 35	Thomas Coughlin,	Died March 13th, 1914.
No. 44	James Trewick,	Died August 13th, 1914.
No. 52	William Cooney,	Died July 4th, 1914.

The number of pensioners on the pension roll December 1913 was:

Old Age	23
Widows and Orphans	16
Total	39

Total number of widows and orphans cared for at that time was as follows:

Widows	15
Orphans	29
Total	44

On December 1914 the following number of pensioners were on the pension roll:

Old Age	28
Widows and Orphans	17
Total	45

Total number of widows and orphans on the pension roll December 1914:

Widows	15
Orphans	31
Total	46

The average yearly pension for old age pensioners on December 31st, 1914 is $234.84.

The average yearly pension for widows and orphans December 31st, 1914 is $163.88.

During the year there have been no changes in the pension payroll of the Furnace Department, there remaining one old age pension and one widows and orphans pension.

Pension payments for the years 1909 to 1914 inclusive, are as follows:

Mining Department:

Old Age Pensions

1909	$ 351.92
1910	896.44
1911	1690.37

Mining Department:

Old Age Pensions (Continued)

1912	$ 3865.95	
1913	5133.62	
1914	6179.57	
Total		$ 18117.87

Widows and Orphans Pensions

1909	$ 464.00	
1910	1043.00	
1911	2649.00	
1912	3113.00	
1913	3025.00	
1914	3403.00	
Total		$13697.00
Total Mining Department		$31814.87

Furnace Department:

Old Age Pensions

1910	$ 111.75	
1911	268.20	
1912	268.20	
1913	268.20	
1914	268.20	
Total		$ 1184.55

Widows and Orphans Pensions

1911	$ 120.00	
1912	180.00	
1913	180.00	
1914	180.00	
Total		$ 660.00
Total Furnace Department		$ 1844.55

Total amount paid Old Age pensioners 1909 - 1914 inclusive,

Mining Department	$ 18117.87	
Furnace Department	1184.55	
Total		$ 19302.42

Total amount paid to Widows and Orphans 1909 - 1914 inclusive,

Mining Department	$ 13697.00	
Furnace Department	660.00	
Total		$ 14357.00
Total Pensions Paid		$ 33659.42

The following statements show the comparison between the amounts paid for pensions during the five years and the estimated possible amounts for the same period, estimate being made in 1908.

Mining Department:

Old Age Pensions

Estimate for 1909-1913 inclusive,	$ 23829.00	
Estimate for 1914	6423.00	
Total		$ 30252.00

Widows and Orphans Pensions

Estimate for 1909-1913 inclusive,	$ 7470.00	
Estimate for 1914	2880.00	
Total		$ 10350.00
Total Estimated		$ 40602.00

Total amount paid 1909-1914 inclusive.

Old Age Pensions	$ 18117.87	
Widows and Orphans	13697.00	
Total		$ 31814.87

The pensions paid for Old Age are still running a little less than the estimated probable amount that might be required. The pension paid to widows and orphans still exceed the estimate but from now on this will reduce on account of their reaching the limit of payment provided by the pension system, no new pensioners of this class being put on this roll.

Old Age Pensions Estimated for 1914	$ 6423.00
Old Age Pensions Paid - 1914	$ 6179.57
Widows and Orphans Pensions Estimated for 1914	$ 2880.00
Widows and Orphans Pensions Paid - 1914	$ 3403.00

When the compensation law went into effect September 1st, 1912, payment for widows and orphans was discontinued and only one has been added to the list since then; this being an accident having occurred previous to the operation of the compensation law and by agreement in settlement the two orphan children of John Tahtinen were to receive a pension for five years. Tahtinen's wife is dead and the children live in Finland.

Widows and Orphans pensions in force September 1st, 1912 will continue for the time for which they were granted.

During the year 1915 the following widows and orphans pensions will cease:

No. 10	Children of Nicholas Pearce,	Ending June 30th, 1915.
No. 13	Widow and children of Donato Carso,	Ending August 31st, 1915.
No. 14	Widow of James Williams,	Ending September 30th, 1915.
No. 17	Widow and children of Abel Himottu,	Ending November 30th, 1915.

The rest of the regular widows and orphans pensions will expire during the year 1916, one in 1917, one in 1918 and four will continue until 1920 on account of young children.

I have seen the pensioners from time to time during the year and visited all of them who reside here in December. They are all in fairly good physical condition with the exception of Isaac Moss, pension No. 28, who is ill with diabetes and it is uncertain as to how long he may live.

VISITING NURSES.

The nurses that were in our employ at the beginning of the year have continued until the present time.

Miss Hassler at Ishpeming

Miss Atkin at Negaunee

Miss Tucker at Gwinn.

This department of the work has been satisfactory and while its financial value is impossible to determine, we are continually hearing of cases in which special assistance has been rendered during the regular work of visiting sick people and advising with members of the family. It is certainly greatly appreciated.

The following tables show in detail the cases visited and number of adults and children of each sex and the different diseases or ailments.

Since the closing down of some of the work the first of October the nurses have been especially busy in the investigation of families of which the father or supporting member is out of work.

Where special need has been found it has been called to the attention of Mr. Sporley, the County Poor Commissioner, the minister and ladies of the church to which they belong, and we have supplemented their assistance when found necessary.

In February a conference was held in our office of the visiting nurses of the Oliver Iron Mining Company here and of Iron Mountain, the nurse of Pickands, Mather & Company of Palatka, the Metropolitan nurse and ours of this district. They discussed the general features of the work, matters of reports, etc.

YEARLY REPORT OF VISITING NURSE.

Ishpeming. Miss Hassler, Nurse.

Number of cases cared for during year	221
Total number of visits to patients	1331
Number of Pension calls	393
Number of social calls	421
Number died	15

Classification of new cases for the year:

Number of adults	114	Male	14	Female	100
Number of children	107	Male	57	Female	50

Nationalities of new cases for the year:

American	12	Irish	10
English	57	Italian	17
Finnish	44	Norwegian	12
French	37	Polish	1
German	6	Swedish	25

Diseases and number of cases: New patients for the year:

Appendicitis	5	Infants, newborn	43	Quinsy	1
Bronchitis	6	Infections	20	Rheumatism	3
Burns	2	Injury	3	Sore Eyes	2
Cold	1	Kidney Trouble	1	Stomach Trouble	1
Convulsions	1	Nephritis	5	Tonsilitis	3
Enteritis	4	Obstetrical	42	Typhoid Fever	2
Erysipelas	1	Peritonitis	2	Unclassified	34
Gastritis	17	Pneumonia	7	Undiagnosed	3
Heart Trouble	3	Post Operative	7	Var. Ulcer	2

YEARLY REPORT OF VISITING NURSE.

Negaunee. Miss Atkin, Nurse.

Number of cases cared for during year	226
Total number of visits to patients	1957
Number of Pension calls	40
Number of social calls	732
Number died	5

Classification of new cases for the year:

Number of adults	132	Male	15	Female	117
Number of children	94	Male	39	Female	55

Nationalities of new cases for the year:

American	60	French	30	Italian	12
English	47	German	5	Norwegian	1
Finnish	52	Irish	5	Swedish	14

Diseases and number of cases: New patients for the year:

Appendicitis	4	Heart Trouble	2	Post Operative	3
Bowel Trouble	18	Infants, newborn	21	Pul. Tuberculosis	2
Bronchitis	1	Infections	7	Quinsy	1
Cold	9	Insanity	1	Rheumatism	7
Colic	1	Injury	4	Senility	4
Diabetis	1	Kidney Trouble	2	Sprains	2
Eczema	2	Mal-Nutrition	5	Stomach Trouble	1
Enteritis	1	Mastoditis	2	Tonsilitis	13
Epileptic	1	Obstetrical	36	Typhoid Fever	2
Gall Stones	2	Peritonitis	1	Unclassified	56
Gen. Deb.	4	Pleurisy	2	Undiagnosed	3
		Pneumonia	5		

YEARLY REPORT OF VISITING NURSE.

Gwinn District. Miss Tucker, Nurse.

Number of cases cared for during year	253
Total number of visits to patients	956
Number of Pension calls	16
Number of Social calls	114
Number died	7

Classification of Cases for the year:

Number of Adults	133	Male	16	Female	117
Number of children	120	Male	44	Female	76

Nationalities of Cases for the year:

American	55	Irish	0
Austrian	2	Italian	70
English	19	Norwegian	5
Finnish	41	Scotch	1
French	116	Swedish	42
		German	2

Diseases and number of cases: Patients for the year.

Appendicitis	6	Grippe	1	Peritonitis	2
Bowel Trouble	5	Heart Trouble	1	Pleurisy	2
Bronchitis	11	Heat Prostration	1	Pneumonia	11
Burns	1	Hysteria	1	Post Operative	5
Cold	18	Infants, Newborn	13	Pul. Tuberculosis	1
Colic	2	Injury	3	Quincy	3
Convulsions	1	Kidney Trouble	2	Rheumatism	5
Croup	3	Larangytis	1	Sore Eyes	7
Exzema	2	Lumbago	1	Sprains	1
Enteritis	1	Mastoditis	1	Stomach Trouble	2
Erysipelas	1	Meningitis	1	Tonsilitis	8
Feeding	24	Measles	23	Unclassified	36
Gastritis	9	Neuralgia	1	Undiagnosed	1
Gall Stones	1	Obstetrical	34		

Number of patients attended and calls made by Visiting Nurses.

	No. of Cases	Male Adults	Female Adults	Male Children	Female Children	Total No. of Visits
Ishpeming	221	14	100	57	50	1331
Negaunee	226	15	117	39	55	1957
Gwinn	253	16	117	44	76	956
Total	700	45	334	140	181	4244

Nationality of Cases

	American	Austrian	English	Finnish	French	German	Italian
Ishpeming	12		57	44	37	6	17
Negaunee	60		47	52	30	5	12
Gwinn	55	2	19	41	16	2	70
Total	127	2	123	137	83	13	99

	Irish	Norwegian	Polish	Swedish	Scotch
Ishpeming	10	12	1	25	
Negaunee	5	1		14	
Gwinn		5		42	1
Total	15	18	1	81	1

The following statement shows the expenses of the Visiting Nurses for the year 1914:

	Total for Year.	Average per Month.
Ishpeming	$ 1135.24	$ 94.60
Negaunee	1012.82	84.40
Gwinn	1191.03	99.25

In addition to the regular work of the nurses a Christmas entertainment was given at Ishpeming, Negaunee, and at Gwinn for the children of the homes in which the nurse had visited. The Club House and the halls in which these meetings were held were crowded to their capacity and there is some question as to the desirability of continuing these unless they can be held somewhere on the ground floor, as with this great number of children crowded into a hall the conditions would be very dangerous in case of any accident.

Rest Cottage.

This work for tired-out and sick people has continued at the Rest Cottage during the year on the same basis as previously. The work is carried on in the two cottages and we had the services of Mrs. Daniel Oie, wife of a man who was formerly on our pension list, to look after the cooking and the care of the people under the direction of the nurses.

The work was more or less interrupted this summer on account of the conventions which were held in Ishpeming. The Knights of Pythias, Sons of St. George held their annual meetings, the Firemen held their annual tournament, and the Chautaqua was here for nearly a week. Many of the people were obliged to return to their homes during some of these celebrations and in consequence of this, more people were at the Cottage at some one time than in previous years.

With the accomodations that we have in the two cottages it is desirable not to have more than twelve people there at any one time. As Ishpeming will be without these various features for 1915 the work can be more regularly taken care of.

It is undoubtedly of great value and we could not secure a better general location. We had no trouble from Deer Lake during the season, no pronounced odor being perceptible at any time at the Cottage so that it will undoubtedly be entirely satisfactory for the coming season.

The following table gives the number of guests and the cost of maintenance of the Rest Cottage work during the last seven years.

Year	No. of Guests.	Cost of Operation.
1908 (The Maples)	21	$ 89.93
1909 (Deer Lake)	29	305.82
1910 (Deer Lake)	24	403.45
1911 (Deer Lake)	45	482.89
1912 (Deer Lake)	57	270.23
1913 (Deer Lake)	82	358.45
1914 (Deer Lake)	107	625.56
Total	365	$ 2536.33

Of the 107 people at the Rest Cottage in 1914, twenty-six were from Negaunee. Of these ten were young ladies who did the housework while their mothers were at the Cottage and were taken there for an outing for one Saturday and until Sunday morning.

Statement for 1914.

Number of meals furnished	2754
Total days	918
People at Rest Cottage	107
Average number of days per person	8.57
Number of days Cottage open	83
Average number of people at Cottage per day	11.06
Cost of meals - per meal	22.71

WORKMEN'S COMPENSATION.

The work of the compensation payments and records has been in charge of Mr. T. H. Bargh, as during the previous year. The provisions of the Law still continue very satisfactory to our men and we have had no complaint of any kind in regard to settlements.

In only one case has there been any special delay in settlement. This was that of Mrs. Hilda Juhola, widow of John Juhola who lost his life in an accident at the Maas Mine on March 2nd, 1914. She had some poor advice from one of her friends and at first thought that she should receive larger compensation than we informed her was payable under the provisions of the Law, she wrote to the Industrial Accident Board at Lansing and she was advised that our statement to her was correct. After some delay she willingly accepted the payments, which were $8.36 per week for a period of 300 weeks.

During the year we have found it advantageous to make some lump sum settlements. This was done in the case of the three Crosby accidents which occurred in November 1913, settlement being effected this year. Payment in one case was made partly to the administrator in Minnesota to cover items of expense and the balance was sent to the family in Montenegro. This was by order of Judge Stanton of the Circuit Court. In the other two cases the money was sent to the widows in Bosnia by Foreign Draft through the Austrian Consul at St. Paul, he being under bond in each case for $2500.00 until receipts are received from the widows. Both receipts have been received but one was returned for a signature of a witness which had been overlooked.

In the case of Mrs. John Piiparinen, whose husband lost his life in an accident in the North Lake Mine on February 12th, 1914, a lump sum settlement was made in order that she might return at once to Finland, as she had been in this country only three months, had no friends, did not speak English, and her husband had no relatives here.

Jacob Koskie, who was injured in the Central Shops in the Gwinn District, was paid a lump sum in order that he might go on a farm at Maple Ridge. He had previously lost a leg through an accident and lost three fingers by this accident and he did not wish to work further in the shop.

Secco Grasseno was injured at the Maas Mine and previously while working for the Oliver Company had lost an eye. He wished to return home to Italy and a lump sum settlement was made with him.

August Tigiani who lost two fingers in an accident at the Chase Mine also desired to return to Italy and a lump sum settlement was made with him.

Settlement was made in the case of Waino Tuomi, who died as the result of an accident at the Negaunee Mine on July 10th, 1913. Tuomi was a single man but had parents residing in Finland and he had been sending small sums of money to them. On the evidence of a final statement submitted, a definite amount was agreed upon and settlement affected.

Richard Morris suffered a fracture of his leg at the Mackinaw Mine. He desired to open up a little harness repair shop and a lump sum settlement was effected on the basis of the loss of time provided for by the Compensation Law.

Tony Vallar who was injured at the Austin Mine on February 27th, 1913 was given a lump sum settlement in order that he might return to his home in Italy.

We also paid a lump sum to Victor Niemi for the partial loss of the sight of one eye at the Cliffs Shaft Mine on October 15th, 1913. We understand that he returned to Finland as he planned to do.

Isaac Holso was also paid a lump sum settlement for the partial loss of the sight of one eye at the Lake Mine November 5th, 1913.

In all of these cases the Law provided for a definite amount to be paid and the people wrote letters to the Industrial Accident Board asking for lump sum settlements which the Board instructed us to make.

At the present time we are paying compensation weekly in twelve fatal cases, all to continue for 300 weeks. Four of these fatalities occurred in 1913, the other eight in 1914.

During the year I attended two compensation conferences at Lansing, one in February and one in November. The meeting in February was of a general character, discussing various features of the Law, and was primarily a conference of the compensation boards of the different States. The November meeting was largely on the matter of hernia and the proper manner of handling payments to aliens residing abroad.

We have had one visit from Mr. O. C. Reeves, a member of the Industrial Accident Board, during the year. He was here in September while passing through from attending an arbitration case in the Copper Country.

There has been some change in the personel of the Industrial Accident Board. Mr. Reeves, a Republican, whose term expired in September 1914 was replaced by Thomas B. Gloster of Detroit, a Democrat, by Governor Ferris. Mr. R. L. Drake, Secretary of the Board was also removed in November, Mr. Gilbert W. Dickson being appointed in his place. The work of the Board seems to be going along well and cases are promptly taken care of.

During the year there has been more or less discussion of changes in the Law and it is anticipated that the present legislature now in session will make some changes, which will be, of course, favorable to the employe, making the Law more liberal in its provisions. The main points which have been brought up are the matter of occupational diseases, increase in the percentage of weekly compensation from 50% to 65%, increase of medical and hospital service from three weeks to three months, a waiting period of one week instead of two before compensation shall begin, and the taking up of this waiting period at the end of four weeks instead of eight, as now provided for by the Law.

The accompanying statement shows the amount expended at the different mines during the year, with the total cost of compensation for that period. It also shows the payments that were made this year for

accidents which occurred previous to 1914, and an estimated future liability for accidents which occurred up to December 31st, 1914. This estimate is quite exact for the reason that most of these are for fatal cases, which amounts are definitely determined, the small balance being for temporary disability cases which have occurred somewhat later in 1914 and will be continued for a time after the first of the coming year.

It has been recommended that a certain percentage of the payroll each month be credited to a compensation fund out of which compensation payments would be made. The present balance of the Suspense Funds, $ 10067.93 on January 1st, 1915, from which compensation is now paid will only last for three or four months of 1915 and as there is an estimated deferred liability of $25797.01 to be paid after January 1st, 1915 for cases which have already occurred, it seems as though some provision should be made to cover this liability. Any committee asking for information would be very likely to inquire as to what provision we had made to take care of the deferred payments. The Industrial Accident Board of course are accepting our financial ability to take care of all such cases in permitting us to carry our own risk.

During the year all of the various suspense funds to the credit of the different mines of The Cleveland-Cliffs Iron Company, the Cleveland Iron Mining Company and the Iron Cliffs Company have been combined into one fund.

Accidents occurring at the Negaunee and Athens Mines are not paid out of these funds as they were accumulated by contributions by the above three companies. The Republic Mine, not having any funds contributed by the Company, the compensation is being charged to operating costs under personal injury expense, as is the case at the Athens and also at the Negaunee Mine.

All compensation paid and deferred liability caused by the accidents which occurred in 1914 show a cost of 1.60% of the payroll for 1914. This increase over 1913 is accounted for by the fact that of the ten fatalities

which occurred in 1914, eight were of married men.

GENERAL.

From his connection with the compensation work of the Mining Department the Secretary has also been frequently consulted and kept in touch with the compensation work of the Railroad, Furnace, Land and Lumbering Departments.

THE CLEVELAND-CLIFFS IRON COMPANY.

STATEMENT OF COMPENSATION AND BENEFIT PAYMENTS FROM JANUARY 1ST, 1914 to DECEMBER 31 ST, 1914.

	No. of Employes	No. of Fatal Accidents	No. of Non-Fatal Accidents	Actual Compensation paid in 1914	Less payts. on previous years Accidents	Compensation paid on 1914 Accidents	Compensation Still Pending	Actual Payments To Physicians	Less 1913 Pending	Still Pending	Fatal Cases Pending	Injury Cases Pendi[illegible]	Benefit Payments
Maas	313	3	19	2314.26	1217.13	1097.13	6284.76	358.50	65.00		4		1252.16
Austin			1	1090.36	1090.36								95.83
Gwinn	141		35	559.02	8.08	550.94	10.84	168.80				1	397.18
Stephenson	301		72	961.21	181.17	780.04	116.62	370.10	6.50			4	667.16
Princeton	12		1					14.20					23.33
Gardner-Mackinaw	52		6	862.73	767.53	95.20	0.00	50.70					314.18
Morris-Lloyd	306	1	60	3052.75	26.88	3025.87	773.70	367.80				4	996.18
Chase	81		15	858.83	201.79	657.04	13.55	124.50	20.00			1	31.00
Jackson	51		1	30.30	30.30	0.00		15.40					4.67
Miscellaneous	14			374.92	374.92	0.00	1687.14	14.00			1		
Hard Ore	39		1	76.80	76.80			60.50	13.00				180.83
Lake	266		46	2513.70	1589.59	924.11	2591.21	319.40		62.00	1	4	900.35
Cliffs Shaft	304		48	2222.16	1688.43	533.73	374.92	464.54	100.14			1	997.20
Salisbury	164	2	19	929.19	150.00	779.19	4091.88	165.20			2		1305.49
Republic	273	1	60	667.55		667.55	3593.00	217.40			1	5	
General Office	95							113.95					
Negaunee Mine	332	2	33	2442.13	434.25	2007.88	3647.40	398.00			2	2	1808.33
Athens	32	1	4	408.63		408.63	2459.99	38.00			1	1	500.00
Crosby	46		12	8012.30	7874.92	137.38	90.00	62.25				1	
Pension Dept.	3							3.50					
Total	2825	10	433	27376.84	15712.15	11664.69	25735.01	3326.74	204.64	62.00	12	24	9473.89

Compensation paid on 1914 accidents		11664.69
Compensation still pending		25735.01
Cost of medical and hospital service		3184.10
	Total	40583.80
Less pending for year 1913		6997.71
Compensation paid and pending for year 1914		33586.09

Percentage of payroll .01607

SUSPENSE FUND.

The Cleveland-Cliffs Iron Company.

Balance January 1st, 1914	$ 694.08
Transferred to General Fund	10942.78
Transferred I. C. Co., to C. C. I. Co.,	6500.29
Transferred C. I. M. Co., to C. C. I. Co.,	13308.12
Total	$31445.27
Disbursement during year	- $21377.34
Balance December 31st, 1914	$10067.93

Negaunee Mine.

On hand January 1st, 1914	$ 1435.03
Disbursements during year	- $ 1435.03 ✓
Balance December 31st, 1914	0.00

This fund was exhausted in July. Compensation payments are now charged to Account 30 H. Personal Injury Expense.

No Suspense Fund at Athens Mine.

10067.93
5018121
6049 14

BENEFIT FUNDS

On January 1st, 1914 the Benefit Funds to the credit of the different mines of The Cleveland-Cliffs Iron Company were transferred to one general fund in one account. On May 1st the funds to the credit of the mines of the Iron Cliffs Company and The Cleveland Iron Mining Company were also transferred to the above account. The following statement shows the amount of these funds and a disbursement of $5620.06 during the year 1914.

NEGAUNEE MINE

On January 1st, 1915 there was a balance to the credit of the Benefit Fund of $ 1593.73 and the payments made during 1914 amounted to $1544.83. These funds will last through the year of 1915 and unless fatalities should occur, will last considerably longer.

On January 1st, 1914 there was to the credit of the Benefit Fund of the Athens Mine $22.50. Interest for 1914, $1.11.

A fatality occurred at the Athens Mine on August 14th, 1914, this being the death of Oscar Larson. He was a Negaunee Mine man who was taken over to work at the Athens because he was a good man for the work. He had contributed to the benefit funds previous to August 1st, 1912 and his widow was consequently deemed entitled to payment of the regular amount of $500.00.

BENEFIT FUND.

The Cleveland-Cliffs Iron Company.

Balance January 1st, 1914	$ 3758.14
Transferred to General Fund all C. C. I. CO. mines	23192.55
Transferred I. C. Co., to C. C. I. Co.,	10336.76
Transferred C. I. M. Co., to C. C. I. Co.,	15002.39
Interest	3511.43
Total	$55801.27
Disbursements during year	$ 5620.06
Balance December 31st, 1914	$50181.21

Negaunee Mine.

Balance January 1st, 1914	$ 3138.56
Disbursements during year	$ 1544.83
On hand December 31st, 1914	$ 1593.73

Athens Mine.

On hand January 1st, 1914	$ 22.50
Interest	1.11
Charge against Opening and Equipping Athens Mine	476.39
Total	$ 500.00
Disbursements during year	$ 500.00
On hand December 31st, 1914	0.00

J 177494

GWINN CLUB

Mr. Austin has continued as secretary, and the Club has increased in popularity. One of the principal reasons for this is the introduction of moving pictures. The cost of changes and apparatus for the moving pictures, chairs etc., was $828.11

The total receipts for the year were	$ 1569.95
The total expenditures were	900.71
	$ 669.24

When the mines reduced operations on October first the people were notified that the picture show would be run a less number of times per week, they being then shown three nights and two or three afternoons, depending on the kind of pictures. The people at once objected to the reduction of service and it has continued with no lessening of the receipts.

The pictures attract a great many people to the building and when there the men make use of the other features, so that the general attendance at the club has increased in those who make use of the privileges.

	Men	Boys	Girls	Total
Average daily attendance at the building in December 1914.	102	26	30	158

14

It has been the plan of the club to have some entertainment for the public from month to month. In many cases this is provided by other agancies holding entertainments there to which the public is invited. The following list shows this work for the year.

January Club Orchestra Dance. One basket ball game with outside team.

February Free entertainment to members of the Association on the 8th. Four basket ball games.

April Dance given by baseball club. Opening of the moving picture hall with free entertainment to which the adult members were admitted in the evening; the children in the morning and afternoon.

May Junior Class Gwinn High School reception and dance.

July The camp at Bass Lake was formally opened and it is estimated that 600 people were in attendance on the opening day.

September Two dances given by the Basket Ball team.

October One entertainment from a Lyceum course of two numbers was given during the month, this being the Kentucky Minstrels. Total attendance was 227. Two dances were given by the basket ball team.

November Dance given by the baseball club. Concert under auspices of the M. E. Church.

December Firemen's Dance on New Year's eve. Basket ball game with the K. Of C. team of Ishpeming.

The summer camp was opened on July 12th and was very well attended by the people of Gwinn, Austin and Princeton. This camp is going to be one of the attractive features of the Club work in the summer for the families as well as for the young people of the community.

Basket ball has continued very popular and is an attractive feature for people of all ages. Attached is an annual statement of the club for the year. This statement shows the returns from certain games and privileges as follows:

RECEIPTS AND EXPENDITURES ON ACCOUNT OF CERTAIN FEATURES
YEAR 1914.

	Cash	Coupon Book	Total	Expenditures	Excess of Receipts Over Expenditures
Bowling Alley	209.55	53.40	262.95	123.26	139.69
Pool & Billiards	143.90	52.80	196.70	67.73	128.97
Locker	29.00		29.00		29.00
Buffet	165.85	62.50	228.35	175.51	52.84
Towels and Soap	27.60	13.55	41.15		41.15
Moving Pictures	1569.95		1569.95	900.71	669.24
Totals	2145.85	182.25	2328.10	1267.21	1060.89

FINANCIAL STATEMENT FOR YEAR 1914.

Balance January 1st, 1914	$ 229.79		
Total Receipts	3909.20		
Total		$ 4138.99	
Total Expenditures		3575.16	
Balance December 31st, 1914			$ 563.83

RECEIPTS

Membership Fees - Men		$ 1483.75
Membership Fees - Boys		16.40
Coupon Books Returned to Date		166.50
Bowling Alleys		209.55
Pool and Billiards		143.90
Lockers		29.00
Buffet		165.85
Towels and Soap		27.60
Moving Pictures		1569.95
Miscellaneous - Hall Rental		96.70
Total		$ 3909.20

EXPENDITURES

Building, Maintenance		$ 185.57
Building, Improvement		10.46
Equipment		30.85
Equipment, Maintenance		17.92
Grounds, Care of		3.85
Lighting		337.52
Heating		499.84
Water		144.00
Bowling Alleys		123.26
Pool Room		67.73
Buffet		175.51
Stationery and Printing		48.15
Entertainments		26.00
Laundry		33.92
Salaries		251.00
Moving Pictures		900.71
Reading Room		117.31
Gymnasium		26.79
Miscellaneous		547.38
Power		27.39
Total		$ 3575.16

ISHPEMING Y. M. C. A.

We have co-operated with the officials of the Association in the work during the year and from their reports we have the following data for the years work:

Members in good standing December 31st, 1914.

Mining Company employes	92
City	175
Boys	169
Sustaining	36
Total	468

The activities at the building have been numerous and the work we believe has been very well looked after. The following data shows the character of it.

	Men	Boys	Total
Average daily attendance at building	149	130	279
Baths taken	9135	9855	18990
Entertainments			8
No. of men and boys using swimming pool			2246
Attendance at gymnasium classes	2029	5099	7128
Homes of boys visited			46
Basket ball games			38

The following table shows the number of meetings of various kinds and the attendance:

	No. of Meetings	Attendance
Men's meetings	25	2712
Entertainments	8	2774
Committee meetings	36	184
Socials	28	577
Educational Classes	35	567

In addition to the above activities as reported, a minstrel show was held in April on two evenings with a very large attendance. The band has maintained itself and has done very good work. There have been wrestling classes, checker tournaments, and other social features. A Father and Son banquet was held with 200 present.

In October the School Board secured the use of the gymnasium on certain days of the week for their physical work, the scholars coming there from the different schools. The School Board is to pay the Association $50.00 per month for 10 months of the year. This has worked out very satisfactorily to the present time.

On Labor Day, in September, the camp at Michigamme burned down and no arrangements have as yet been made, and will not be made during the coming year, to erect a new building.

In February the Association received from The Cleveland-Cliffs Iron Company $3319.29 and in April from the Oliver Iron Mining Company $ 2345.55 to apply on the deficit. The proportion of the Lake Angeline Company has not been paid and its officers have advised that it would not be.

The officers of the Association have had various meetings among themselves and consultations with the different mining company officials and plans have been made to reduce the running expenses of the work so as to definitely keep within its income.

MUNISING Y. M. C. A.

The new building was started in August and work has been continued during the year. Mr. George Leiphart, who has the general contract, was able to get the building under cover before the winter set in and was therefore able to continue the work and it will be completed early in the year. Plans are now being considered by the Board of Directors for the opening.

The old building has been repaired for dormitory purposes and was occupied in December by a number of Club members.

MUNISING HOME GARDENING.

I cooperated with the Women's Club in the home improvement work during the season. At the beginning of the year I gave a stereopticon talk to the Business Men's Association and the Women's Club.

The women took orders for seeds, plants, shrubs and trees, and looked after the work throughout the season and the results for the year were very satisfactory.

HOME GARDENING.

The regular prizes were given as in previous years in the different cities and the general impression was that the grounds were the best that have ever been inspected. Visitors to the different conventions were much impreseed with the looks and care of the city.

The awards were as follows:

Ishpeming

Best Kept Premises	$ 111.00
Vine planting	28.00
Window Boxes	22.00
Vegetable Gardens	29.00
Special Prize	10.00
	200.00

Negaunee

Best Kept Premises	42.00
Vine Planting	12.50
Window Boxes	8.00
Vegetable Gardens	26.00
	$88.50

Gwinn, Austin and Princeton

Best Kept Premises	38.00
Vine Planting	12.50
Window Boxes	12.50
Vegetable Gardens	30.00
	$ 93.00

North Lake

Best Kept Premises	30.00
Vine Planting	12.50
Window Boxes	12.50
Vegetable Gardens	41.00
	$ 96.00

Gladstone

Best Kept Premises	18.50
Vine Planting	10.00
Window Boxes	7.00
Vegetable Gardens	14.50
	$ 50.00

Railroad Department

Best Section House Grounds	$ 25.00

Republic will be included in the Prize Awards for 1915.

EDUCATIONAL WORK.

Mr. C. S. Stevenson, who came with the Company on November 17th, 1913, spent the balance of that year in the preparation of the school work, beginning his classes the first of 1914. He has continued in charge during the year. The school has been much more successful than before as is evidenced by the attendance of the scholars and the papers prepared by them, fully shown by Mr. Stevenson's report accompanying.

EMPLOYES RECORDS.

The Department has continued its records of employes and has investigated, so far as time permitted, the record of the employes of the Republic Mine. Data has been secured concerning about one-half of the present force at Republic and this will be continued until a complete record has been made.

SAFETY WORK.

We have co-operated with the Safety Department and have looked after the records of the Central Safety Committee.

I have made several trips with Mr. Conibear in special cases and assisted at the time of the Negaunee Mine fire.

IMPROVEMENT WORK.

We have visited the different locations with Mr. Manning and frequently with Mr. Cotter, and with Mr. Erickson of the Land Department have inspected several places where improvement work was needed or was being undertaken.

ISHPEMING ADVANCEMENT ASSOCIATION.

The Association has held monthly meetings in the Y. M. C. A. and had an annual dinner early in the year.

There is much interest in the organization and in November a Women's Welfare League was organized by it to look after needy families. They have continued in this work and have accomplished much good in assisting families that were found to be in very destitute circumstances.

OUT OF DOOR SPORTS.

We assisted in the matter of the Annual Ski Tournament held on Washington's Birthday which as usual was a very successful affair, although on account of so many tournaments being held in Michigan, Wisconsin and Minnesota the receipts were not as large as they should have been.

The gold, silver and bronze medals contributed by Mr. Mather for the longest standing jumps by Michigan amateurs were awarded by him at the Cottage after the tournament to the following:

Gold Medal	Walter Carlson	Ishpeming	118 feet
Silver Medal	John Fieldseth	Ironwood	115 feet
Bronze Medal	Chas. Tall	Negaunee	114 feet

RED CROSS SEALS.

We assisted the Visiting Nurse Association in the sale of Red Cross Stamps but on account of the condition of work here the sale was not pressed.

The number of seals disposed of were as follows:

Ishpeming	3728
Negaunee	301
Total	4029

One third of the proceeds were sent to the Michigan Anti-Tuberculosis Association at Ann Arbor, the balance being retained for tubercular work of the Nurses's Association.

PLAYGROUNDS AND SOCIAL CENTERS.

We have consulted with the School Boards of Ishpeming and Negaunee and with the City Council at Ishpeming concerning playground work and social activities. Mr. Pettit of the National Playground Association was here in January and met the different citizens, school board and City Council.

A playground director was secured for Ishpeming and some apparatus installed. More use has been made of our school buildings than formerly, especially by the older pupils and their friends.

In addition to the playground work in summer, ice skating rinks have been maintained at Ishpeming and Negaunee with very satisfactory results.

PLAYGROUNDS AND SOCIAL CENTERS (CONTINUED)

At Gwinn the new channel for the east branch of the river has been in good condition for the greater part of the winter and the small rink which we have had at the Club House in other years was not found necessary.

REPORTS.

Hospitals.

A meeting was held with the Oliver officials and Mr. Webb of the Republic Iron & Steel Company , in February, in regard to the matter of hospitals and an investigation started at a meeting held in Duluth in December 1913 was continued.

We investigated the affairs of the hospitals at Ishpeming, Negaunee, Gwinn and Republic, and reports were made of the condition under which they were being operated, to show the financial cost and returns.

Republic Funds.

A report was prepared upon the special funds of the Republic Mine, consisting of the following:

Fatal Accident Fund,

Sick Benefit Fund,

Accident Fund.

It was reported that these funds which had been contributed by the men were helping the men in a desirable way and should be continued.

American Iron & Steel Institute.

With Mr. Conibear we prepared a report upon the work of the Company in the matter of safety, which was published in the November bulletin of the Iron & Steel Institute.

U. S. Commission on Industrial Relations.

We prepared a report upon the work of the Company, largely statistical, for the Commission.

Dr. Robert Oleson and Dr. Joseph Bolton, employed by the Commission were in Ishpeming for a week in November and made quite a careful study of conditions before coming to the offices of the different companies.

U. S. Commission on Industrial Relations. - Continued.

The investigation covered Company houses, general attitude of the Companies towards their employes, the relation of the Companies towards the affairs of the city, and the general city conditions, including alleys and all sanitary matters.

We spent a number of days with Dr. Oleson, who is a U. S. officer in the Health Service, in visiting our different locations and going over with him the general plans of the Company in its relation to safety, sanitation and welfare.

In a personal letter of a month later Dr. Oleson wrote as follows:

"Dr. Bolton and I have been measuring the cities we have visited by Ishpeming as a standard and have measured many industries against The Cleveland-Cliffs Iron Company. I can truthfully say (unofficially) that Ishpeming is the best administered and livest city we have seen. Moreover when it comes to sensible and practical welfare work, I can assure you that The Cleveland-Cliffs Iron Company is right in the vanguard. The old prevailing idea that the mining communities in Michigan are wild and wooly backwoods places has been effectually exploded on this trip. The so-called "Culture" sections must look to their laurels."

General Welfare.

The regular annual meeting of the Pension Department and Welfare Club was held at Cliffs Cottage on January 24th, and plans for the year considered.

During the year I have been in frequent consultation with the various officials of all Departments in regard to matters of general welfare.

In February I gave a talk before the Social Service Club in Marquette on the matter of improvement work and what could be done in a community of that kind.

W H Moulton

STATEMENT OF EXPENSES OF PENSION DEPARTMENT

FOR SEVEN YEAR PERIOD FROM JANUARY 1ST, 1908 TO DECEMBER 31ST, 1914.

ACCT. NO.		1908	1909	1910	1911	1912	1913	1914
A-1	Salaries of Supt. of Pension Department and assistants	2582 00	2877 68	3020 81	3646 50	3409 19	3754 70	3822 26
b.	Prizes to tenants and employes for Best Kept Premises, gardens, etc.	x 1095 63	519 00	525 00	774 00	894 40	609 38	947 25
c.	All expenses of Supt. of Pension Department, including travelling expenses and livery	436 58	507 83	788 66	577 56	312 65	517 37	481 72
d.	Salary and expenses of Visiting Nurse - Ishpeming	785 90	1290 37	1206 80	1143 94	1143 04	1177 03	1135 24
	Rest Cottage - Deer Lake		305 82	403 45	482 89	270 23	358 45	625 56
	Salary and expenses of Visiting Nurse - Negaunee				362 50	1033 60	927 01	1012 82
	Salary and expenses of Visiting Nurse - Gwinn			268 06	752 80	1068 14	1129 78	1191 03
e.	Apparatus, Express and Freight	130 63	61 94	43 85	113 35	43 22	30 33	63 87
f.	Miscellaneous Expenses							
	Gwinn Hotel	2 25						
	Munising Hospital		130 98					
	Tina Lehtinen, care at Gwinn Hospital			126 50	150 00			
	Photographs, apparatus, cuts, magazines, etc.	91 35	45 80	310 05	218 21	51 62	11 38	9 25
	Leader of Gwinn Band					103 33		
	Peter A. Anderson - assistance previous to pension				45 00			
	Land Department Account - Auto for W. H. Manning				5 00	5 00		
	Expenses of Housing Committee			61 76	541 23			
	Mr. Belden's expenses, National Civic Fed. Meeting. N. Y. Jan. 12-24-1911				17 80			
	Incidental Expense - Mining Department			109 52	20 06	48 25	16 67	
	Incidental Expense - To Treasurer	39 54	127 78		88 00	75 50	60 00	58 15
	Ice Rink - Negaunee	146 63						
	Cleveland Field Playground	222 04	186 69					
	Donations to Incapacitated Employes						712 75	266 40
	Other donations						60 00	
	Membership in Associations							80 00
g.	Employes' Clubs							
	Bowling Alleys and Club Work	26 45	100 00	85 40	40 60	50 70	42 45	62 46
	Tennis Courts - Ishpeming, Negaunee and Gwinn District	333 79	575 22	45 36	78 77	48 89	42 97	4 74
	Phonograph, 200 records, making record case - Club at Ishpeming					107 96		
	Superintendent's Lunches and Incidentals			62 22	83 50	13 30	17 40	34 57
	Gwinn Club House	164 81	155 85	2480 58	3677 48	3327 29	3267 19	3162 17
	Ishpeming Y. M. C. A.				1680 00	1680 00	1680 00	4999 29
	Gwinn Club Moving Pictures - Equipment and installation							828 11
h.	Office Expense							
	Stationery, Office Supplies and Expenses - To Treasurer	151 40	130 32	82 77	132 08	91 60	115 31	112 06
	Stationery, Office Supplies and Expenses - Mining Department			20 61			118 50	
	Office Furniture and Equipment	80 53	162 42			129 58	58 55	121 58
	Postage	26 00	36 00	66 50	55 00	54 50	68 00	83 00
	Pension System Stationery and Pension Booklets		98 50			127 43		
	SCHOOL OF INSTRUCTION							
I-1	Salary of Instructor					800 00	1587 12	2340 00
I-2	Travelling expenses, livery, printing, stationery, etc.					691 60	329 04	772 71
	TOTAL	6115 53	7312 20	9707 90	14686 27	15581 02	16691 38	22214 24
	DISTRIBUTION							
	Mining Department	5352 80	3036 77	2584 86	5420 29	6870 90	7666 77	12201 04
	General Expense - To Treasurer		3988 60	4312 64	4830 70	4167 86	4615 64	4831 89
	Land Department	608 88	130 98	61 76	5 00	5 00	12 00	
	Furnace Department	74 33						
	Railroad Department	51 37						
	Munising Paper Company	28 15						
#	Gwinn Club House		155 85					
	Gwinn District Office Expense			2748 64	4430 28	4537 26	4396 97	5181 31
	TOTAL	6115 53	7312 20	9707 90	14686 27	15581 02	16691 38	22214 24

x Includes Prize Awards $583.63, Authorized in 1907 and paid in 1908.

\# Gwinn Club House included in Gwinn District Office Expense after 1909.

THE CLEVELAND-CLIFFS IRON CO.,

RAILROAD DEPARTMENT

COMPARATIVE STATEMENT OF GENERAL WELFARE

EXPENSES FOR THE YEARS 1910 TO 1914 INCLUSIVE.

	1910	1911	1912	1913	1914
Prizes to tenants		24 00	24 00	25 00	25 00
Donations					
Fire Departments	25 00	25 00	35 00	35 00	20 00
Societies	62 84		15 00	23 00	2 50
Celebrations and Entertainments		45 16	91 00	132 45	13 00
Visiting Nurse - Marquette	120 00	120 00	120 00	120 00	120 00
Munising Hospital				150 00	150 00
Safety Work					
Equipment and work		2718 36	775 51	197 24	
Compensation					
Compensation paid			550 38	3143 15	2174 48
Hospital and Medical Service			156 03	1293 31	842 37
TOTALS	207 84	2932 52	1766 92	5119 15	3347 35

Note:-

$900.00 of the amount charged to L.S.& I.RY. was in settlement of all claims for an injury to John Pantilla in 1911, paid in 1914.

PENSION DEPARTMENT.

THE CLEVELAND-CLIFFS IRON COMPANY.

PIONEER IRON COMPANY.

FURNACE DEPT.

COMPARATIVE STATEMENT OF GENERAL WELFARE

EXPENSES FOR THE YEARS 1910 TO 1914 INCLUSIVE.

	1910	1911	1912	1913	1914
General Welfare Acct. #11					
A-2 Prop. charged by Treasurer			586 00	534 59	444 59
b. Prizes to tenants, etc.	45 00	50 00	50 00	50 00	50 00
d. Visiting Nurse	310 00	300 00	300 00	300 00	300 00
e. Apparatus					
f. Miscellaneous Expenses	5 00	50 00			
Gladstone Club					
Total Cost of Operation	(3918 38)	(3405 79)	(3857 96)	(4587 49)	(3586 95)
Net Loss or Gain	470 50	602 23	111 98	122 30	411 90
Donations					
Churches	25 00		25 00	40 00	55 00
Fire Department		20 00	60 00	10 00	10 00
Societies	10 00	215 00	65 00	39 00	50 00
Celebrations		70 00	41 00		
Persons			254 50	21 00	25 00
Miscellaneous					
Pensions					
Pensions Paid	111 75	388 20	448 20	448 20	448 20
Safety Work					
Office Expense					
Charges for Safety Work and Equipment		524 28	1245 23	502 40	2525 00
Compensation					
Office Expense					
Compensation Paid			13 20	96 96	31 31
TOTALS	977 25	2219 71	3200 11	1919 85	4351 00

THE CLEVELAND-CLIFFS IRON COMPANY

LAND DEPARTMENT

COMPARATIVE STATEMENT OF GENERAL WELFARE

EXPENSES FOR THE YEARS 1910 TO 1914 INCLUSIVE.

	1910	1911	1912	1913	1914
General Welfare Account #11					
A-2 Prop. charged by Treas.			157 13	154 40	197 84
" general welfare work					
" general office expense					
b. Prizes to tenants, etc.					
Negaunee					
Munising					
c. Travelling Expenses					
Housing Committee		204 71			
d. Rest Cottage				12 00	
e. Apparatus					
f. Miscellaneous Expenses					
g. Clubs					
Equipment			30 00		
1/2 expenses of rink and tennis court					
Munising General Welfare					
Donations					
Churches			50 00		
Fire Department	5 00	15 00	15 00	15 00	25 00
Societies			75 00	10 00	
Celebrations			10 00	10 00	
Munising Township					
Munising Hospital	112 50	125 00	160 00	160 00	160 00
Munising Y. M. C. A.	900 00	900 00	900 00	900 00	900 00
Play Ground - Negaunee			10 00	10 00	10 00
Play Ground - Munising					
Pensions					
Office Expense					
Pensions Paid					
Safety Work					
Office Expense					
Charges for Safety Work and Equipment		27 41	27 41		
Compensation					
Office Expense					
Compensation Paid				451 00	838 37
Medical Attendance				311 90	231 92
TOTALS	1017 50	1272 12	1434 54	2043 30	2363 13

THE CLEVELAND-CLIFFS IRON CO.,

LUMBERING DEPARTMENT

GENERAL WELFARE EXPENSES FOR YEARS

1913 AND 1914.

	1913		1914	
General Welfare Acct. #11				
Prop. charged by Treasurer	491	73	504	28
Miscellaneous Expense				
Visiting Nurse				
Marquette				
Donations				
Various Societies	15	00		
Persons	7	20	4	00
Hospital at Munising	350	00	350	00
Y. M. C. A. Munising				
Safety Work				
Equipment				
Compensation				
Medical and Hospital	730	84	1537	52
Payments	573	28	841	11
TOTALS	$2168	05	$3236	91

ANNUAL REPORT

(1914)

OF THE

EDUCATIONAL DEPARTMENT.

****

The Mining School of the Cleveland-Cliffs Iron Company, is of that class of trade schools known as Industrial Corporation Schools, the purpose of which is the mental improvement of those already enlisted in the industry. There are only a very few schools of this general type in operation in the United States at the present time and each of these is operated on a plan peculiar to local conditions, the one thing in common being that the work taught is in harmony with the industry concerned. A serious effort has been made during the year to locate and study the methods of operation of this type of schools; especially those devoted to the education of mine workers. The results of this investigation indicate that there is no school in the United States, the aims and purposes of which are identical to those of the Mining School, the nearest approach being a very few schools which are devoted to the education of coal mine employes. For these reasons the work of the Mining School during the year 1914 was of a pioneer nature in the strictest sense of the term. The probable attitude of the miners toward such work and the capacity of mature workers to comprehend instructional work were each in the beginning unknown. The question of the length of time it would be possible to maintain the attention and interest of miners was of importance in outlining the work, yet unknown. The question of what should be taught and how best to teach it had to be met and answered. It can not be stated at the close of the year that a practical solution of all the problems involved has been found, but it can be stated that the experience gained during the year will be of the greatest value in the future development of the department.

Purpose of the Mining School.

The purpose of the Mining School is to prepare a selected group

of men for the position of shift bosses and also give sufficient instructional work to those who are already employed as shift bosses to insure a high degree of efficiency.

It is essentially true that the foreign labor which has been absorbed by the mining industry in recent years, is an ill-trained product. It should not, however, be the part of the Mining School to train these men(except in unusual cases) since by difference of language and a deplorable lack of early education they are not amenable to school work. It should be the function of the school to train to the highest degree of efficiency that nucleus of bright, English speaking men upon whom this ill-trained product depends for its direction and the success of the Mining School will depend largely upon the care used in the selection of these men.

It is the purpose of the Mining School to produce a confident and self-respecting man conscious of his own worth as an efficient industrial unit. The work outlined in the curriculum will not in itself produce a man of this type; but in addition a high degree of personal friendship must be established between the instructor and students through which medium the men can be induced to express his own personal views on mining matters as well as any grievances against the company which may be founded on facts or as is more often the case on misunderstandings. In short a feeling of confidence must be established first of all after which many problems may be ironed out in the school that the mine has not the time to consider. This interchange of ideas broadens and helps the men and it is perhaps a larger factor in the production of a man of reliability and common sense than is the pure school work itself. The experience already gained has proved that the personal contact between students and instructor is essential to the success of the work and consequently the extension of the work on a correspondence plan could not be advised.

Attitude of the Men Toward the School Work.

When the men began the school work they were as a rule indifferent if not antagonistic to the work. The school work was looked upon with

a suspicion that it was intended to benefit the Company and not the men. Their path to advancement seemed long and very uncertain. They felt that their mind and bodies were in a rut and that the world was arrayed against them. Gradually these prejudices were broken down and replaced with a spirit of openmindedness and enthusiasm. The statement which has been authorized by the Company that insofar as possible all men chosen for shift bosses would be taken from the ranks of the mining school gave them a definite motive and has assisted greatly in breaking down these prejudices. At the close of the year it can be stated definately that the men have become interested and intellectually awakened. They feel that they are becoming masters of an honorable craft and the department fosters this feeling to the fullest extent since it is productive not only of good school work but also it produces a spirit of satisfaction and contentment with their daily work in the mines.

Readiness with which the Men Acquire Information.

The experience of the past year has proven that the men can assimilate new facts readily if care is always taken to bring out the practical application of these facts to their work. For example, a course in arithmetic would be a failure if taught as an abstract subject, but if the instruction is given with a view to its practical application to the daily problems of a miner's life, the student sees for the first time in his life the purpose of the instruction which bored him in his early school days. In short the power to assimilate information is in direct proportion to the practical value of the instruction. The men have a skill derived from long experience in mining operations and can perhaps more readily assimilate academic instruction relating to the industry than the average university student lacking such experience. However in their power to comprehend abstract information their ability is considerably under/that of the average high school pupil.

Development of Independent Thinking.

The experience gained during the first year of the operation of the Mining School has proven that perhaps the greatest weakness of the men

is in their power to do original and independent thinking. This condition is but a natural result of the rigorous discipline which is imposed on the men underground. It is possible for the men to receive instructions from the superintendent, assistant superintendent, safety inspector, mining captain and shift boss. Nothing but items of minor importance are left to the judgment of the miner, and the students lack of analytical power and initiative is a natural resultant. To correct this mental condition the men have been encouraged in the discussion of mining questions, these discussions either preceding or following the usual class period. These discussions, while they are not a scheduled part of the course, have been of sufficient value that mention of a few of the topics discussed are given herewith.

The workmen's compensation law and the information desired on an accident report.

The treatment of a man overcome with powder smoke and other first aid problems.

Methods of procedure at mine fires.

Safe methods of blasting down timber.

Methods of thawing dynamite.

The use of delay action fuses in shaft sinking.

The proper location of holes in blasting various types of ground.

The choice of explosives for different character of ore and rock.

Proper methods of charging and tamping explosives.

The choice of drilling machines for different classes of work.

Proper method of setting timber and the kind of timber to use in caps and legs.

The advantages of systematic sub-level work over unsystematic work.

The relative merits of timbered and untimbered raises.

The proper spacing of raises.

The proper thickness of sub-level slice from the standpoint of safety, costs and recovery.

The inspection and lubrication of hoist ropes.

Underground sanitation.

Ventilation of metal mines.

The sampling of ore in a mine and its relation to the marketing of ore.

The proper degree of discipline of the shift boss over the miner.

The informal discussions above referred to have been found to be valuable yet it was learned that a few of the men had a hesitancy to express themselves. To reach these men the "Monthly Suggestion Papers" were begun on December 1st. This plan requires that each student prepare and submit a paper each month on any mining subject of his own choosing. This system has not been in operation long enough to test its merits but the idea has been well received and the papers submitted for December indicated a laudable effort to do real independent thinking. These papers have a secondary value in the use of English, penmanship and mechanical drawing. It can be definately stated that, as a result of this effort to mentally awaken the men, there has been a marked improvement shown in their ability to do original thinking and in their power of analysis.

Time to be Given to the Course.

The students enrolled in the mining school are mostly men with families and quite a large part of their leisure time is ordinarily given to domestic affairs. The school intrudes upon this leisure time and it is unreasonable to suppose that the men would willingly sacrifice this time from their home affairs over a long period of time. For these reasons it has been planned not to continue the work of any class for more than one and one-half years. This time is sufficient for the instruction in the necessary fundamentals, and after this time the men should be supplied with the additional instruction papers which will be prepared from time to time. These instruction papers will be of such a nature that with the work already secured in the class room they can be readily understood.

Should the Students be Paid for the Time Spent in the Class Room.

The work of the year has been carried on entirely without compensation to the men and the experience gained during the year indicates that

this method is fairly successful. A few of the students suggested at the beginning of the year that the work be placed on the same basis as the rescue training done by the Company, in which the men are paid for the time actually employed in the training work. The department has taken the position that it would be more logical for the men to pay a nominal sum to the Company for the privilege of attending the school than that the company pay them for attendance. It is fully realized however that if the men were paid for the time actually spent in the class room their attendance would be guaranteed and the instructor would be relieved at least in part of the effort expended directly on the maintenance of attendance.

It can not be expected that men of mature years will maintain their attendance in a school of this character unless they feel assured that the work taught has a very definite value in dollars and cents. The department has been authorized to make the announcement that in so far as possible all promotions to shift bosses positions will be made from the ranks of the school. This announcement has helped to maintain the attendance but it is a qualified statement and for this reason its force is partially lost. Again some of the men do not aspire to become shift bosses since as miners they make as much or more money than shift bosses and with less responsibility to themselves.

A definite need of the school is a strong incentive for attendance beyond education for education's sake. It is suggested that if in each district there were offered a scholarship good for one school year at the newly organized Miners Department of the Michigan College of Mines to the student having the best record in his class in the Mining School, it would give the proper incentive for good work and good attendance.

What should be Taught in a Course of this Character?

Since the time spent in the school is small it is evident that only such subjects should be taught as are of practical value to the student in securing his advancement. It is better to teach a few subjects thoroughly than to teach a smattering of a large number of subjects. In the choice of the subjects to be taught, the limited early preparation of the men can not

be lost sight of, and any tendency to introduce university standards must be carefully avoided. The experience of the year has proven that the tentative outline of work suggested at the beginning of the year was too comprehensive. In order that the instruction in the mining school may be sufficiently effective to justify company approval and subsidy two principles should be adhered to: (1) courses of study should be developed from mining situations and be adapted to mining needs; (2) the varied employments of the men should be investigated and analyzed in a search for the common elements on which group teaching can be based. The following course is being followed by the present class. It is designed to cover fundamental subjects on which foundation the student can build after he has left the school. Each of these subjects is taught in the order in which it is here named.

Subject 1. Arithmetic.
" 2. Elementary Drawing.
" 3. Geometrical Drawing.
" 4. Mechanical Drawing.
" 5. Geology.
" 6. The use of a compass and the construction and use of mine maps.
" 7. First-aid to the injured.
" 8. Time Keeping.
" 9. Mining Methods.

DETAILED REVIEW OF THE WORK TAUGHT.

Arithmetic.

The instruction in arithmetic has for its object primarily to impress on the men the necessity for acquiring a thorough system of making, with as much self-dependance as possible, the more simple calculations relating to the wages of miners, costs of mining, and estimates. A total of 18 special instruction papers were written for and used in this instructional work. These papers were designed in so far as possible to cover the needs of the mining industry, but as was anticipated experience has proven that

desirable changes may be made in many places in these papers, note of which has been made in each instance and after making these changes the papers should be printed. The parts of arithmetic treated were; Addition, Subtraction, Multiplication, Division, Cancellation, Addition of Fractions, Subtraction of Fractions, Multiplication of Fractions, Division of Fractions, Addition of Decimals, Subtraction of Decimals, Multiplication of Decimals, Division of Decimals, Percentage, Proportion, and Powers and Roots.

Elementary Drawing.

Drawing is the sign language of the mechanic. In discussing a practical problem the first thought of a shift boss is to make or attempt to make a sketch. Modern mining development demands that its shift bosses and captains be able to understand and work from blue prints. For these reasons the subject of Mechanical Drawing was taught in the Mining School. In the subject of Elementary Drawing five simple mechanical drawings were made by each student, which served largely to accustom the students to the use of drawing instruments.

Geometrical Drawing.

This course has a twofold value, first, it serves as a preparatory subject to mechanical drawing and second, it gives the student a working knowledge of geometrical facts which have many practical applications. The practical applications of the principles taught were emphasized in the course of the instruction. A total of four drawing plates covering twenty-four geometrical principles were required in this course.

Mechanical Drawing.

In this subject each student completed five drawings beginning with simple mechanical devices and proceeding to more complicated work. The prime purpose of the course, which was to teach the men how to read a mechanical drawing, was accomplished.

The course also had a secondary value in the instruction in system and accuracy. In the beginning the men were found to make numberless mistakes in measuring distances and in the details of construction. Gradually, however, this fault was overcome and the men accustomed themselves to think and work accurately.

The work taught in Elementary, Geometrical and Mechanical Drawing was based on a printed instruction paper written for the use of the school and the character of the work done by the students was very satisfactory.

Geology.

The last subject completed during the year was geology. In so far as possible all instructional work in this subject was based on the geology of the Marquette range. A printed instruction paper was used as the nucleus of the course and this was supplemented by 56 lectures and the study of approximately 150 specimens of rocks and minerals. The men took a very lively interest in the subject. It was found that some of the men had a fairly good idea of the geology of the range in the beginning and these men welcomed the opportunity of increasing their knowledge. Many of the men, it was learned, have mineral collections in their homes and many specimens of rocks and minerals were brought to class for identification. It is believed that there is no course more valuable than geology in making a miner's work more interesting and less of a drudgery. The course followed the following outline:

Dynamical Geology.

1. The effect of the atmosphere on rock formation.
2. The decay of rocks.
3. The formation of sedementary rocks.
4. Aqueous agencies.
5. Mechanical effects of water.
6. The formation of water falls.
7. The eroding power of streams.
8. The formation of deltas.
9. The action of glaciers especially on the geology of the Marquette range.
10. The chemical effects of water.
11. Chemical deposits from springs.
12. The condition of the interior of the earth.
13. The effects of heat on rock formation.
14. Organic agencies.
15. The formation of coal and limestone.

Structural Geology.

1. Exposures of rock available for study.
2. Definition of the term "Rock".
3. Classes of stratified rocks.
4. The dip of rocks.
5. The outcrop of rocks.
6. Anticlines, monoclines, synclines.
7. Conformability of rocks.
8. Fossils.
9. Igneous rocks.

10. Igneous rock classification.
11. Metamorphic rocks.
12. Structure common to all rocks.
13. Joints.
14. Fissures.
15. Normal faults.
16. Reverse faults.
17. Forms of ore bodies.
18. Definition of ore.
19. Masses of ore.

Historical Geology.

1. Discussion of the general geological section.
2. Discussion of the succession of rocks on the Marquette range.
3. Detailed description of the rocks of the Marquette range.

History of the Marquette Range.

1. Date of discovery and record of development.
2. History of the Swanzy range.

Iron Ores.

1. Discussion of the composition and characteristics of various iron ores.
2. Discussion of the ores of the Marquette range.
3. Occurrence of soft and hard ores.
4. Description of the ore deposits at the Maas, Negaunee, Austin, Stephenson, Lake and Cliffs Shaft mines.

Below in table I is given a list of the men who successfully completed the first years work. The table does not include the names of three men who began but did not complete the year's work. Attention is called to the average number of years previously spent in school, which is 4.3 years. This figure indicates the reason for teaching work of a very elementary nature.

Table I.

Cliffs Shaft Mine.

Name	Birthplace	Occupation	Age	Previous Schooling	Ability to Speak English
Glanville, John	England	Miner	26	1 year	Good
Erkkila, Nestor	Finland	Shift Boss	29	None	Fair
Harris, Wesley	America	Blacksmith	27	2 years	Good
Larson, Chas.	"	Miner	40	2 "	Good
Maiden, Wm.	England	"	39	3 "	Excellent
Latunen, Elias	Finland	"	34	1 "	Poor
Schadt, Otto	America	Shift Boss	50	4 "	Very good.

Table I.(continued)

Name	Birthplace	Occupation	Age	Previous Schooling	Ability to Speak English
		Lake Mine.			
Williams, Harclus	England	Miner	33	5 years	Good
Wilcox, Robert	America	"	32	6 "	"
Wilcox, Wm.	"	"	26	7 "	Very good
Traise, Richard	"	"	28	6½ "	Fair
Mandley, Edw.	"	"	26	3 "	Very good
Freethy, John	"	Shift Boss	43	5 "	" "
Tervo, John H.	Finland	Trammer	22	3 "	Fair
Skewis, Herbert	America	Miner	33	4 "	Good
		Salisbury Mine.			
Quayle, John J.	England	Miner	35	5 "	Fair
Hill, W. E.	Finland	Trammer	26	2 months	Good
Prudom, Fred H.	America	Shift Boss	38	10 years	Excellent
Cheynoweth, Francis	England	Miner	32	5 "	"
Kennaugh, Wm.	"	Shift Boss	45	5 "	Good
Cooke, Albert E.	"	Miner	45	4 "	Fair
Comish, Thos.	America	"	22	4 "	Good
Creer, Oscar	"	Timberman	21	7 "	Excellent
Corlett, Thos.	"	Miner	22	3 "	Good
Saccoia, Antonio	Italy	"	31	3 "	Fair
Kirschner, Thos.	America	"	32	4 "	Good
		Maas Mine.			
Gambotto, Jos.	Italy	Shift Boss	31	6 "	Good
Easterbrook, Thos.	England	" "	34	6 "	"
Rogers, Henry F.	"	Miner	28	9 "	Excellent
Hawke, Jas.	"	Shift Boss	41	2 "	Good
Frederickson, John	Sweden	" "	31	4 "	Very good
		Negaunee Mine.			
Tregoning, John	America	Shift Boss	28	5 "	Very good
Hares, Noah	England	" "	37	4 "	Good
Uren, Richard	"	" "	34	8 "	"
Erickson, Victor	Sweden	Timber Boss	30	6 "	Fair
Mahoney, Wm.	America	Shift Boss	33	2 "	Good
		Average---------	32	4.3 "	

Below in table II is given a record of the attendance of the various men at classes together with their grade in the various courses. These grades were announced at the completion of each course and the men made an effort to secure the highest possible mark in each course. It is a remarkable and pleasing fact that the justice of the instructor's grading has never been questioned.

Table II.

Name	Number of Classes Attended	Grade in Arithmetic	Grade in Elementary Drawing	Grade in Geometrical Drawing	Grade in Mechanical Drawing	Grade in Geology
Cliffs Shaft Mine.						
Glanville, John	67	B	C	B	A	B
Erkkila, Nestor	71	D	B	A	A	C
Harris, Wesley	63	A	D	D	D	B
Larson, Chas.	69	B	A	A	A	B
Maiden, Wm.	72	A	A	A	A	A
Latunen, Elias	70	D	B	A	A	E
Schadt, Otto	61	D	D	D	D	A
Lake Mine.						
Williams, Harclus	66	E	D	D	A	A
Wilcox, Robert	73	E	D	D	D	A
Wilcox, Wm.	64	A	D	D	D	A
Traise, Richard	74	E	E	D	D	A
Mandley, Edw.	69	A	A	A	A	A
Freethy, John	70	D	A	A	A	A
Tervo, John H.	73	A	A	A	A	A
Skewis, Herbert	59	A	D	D	D	A
Salisbury Mine.						
Quayle, John J.	61	D	E	E	E	D
Hill, W. E.	66	A	A	A	A	A
Prudom, Fred H.	72	B	B	B	B	A
Cheynoweth, Francis	63	A	C	C	C	A
Kennaugh, Wm.	72	A	B	B	B	A
Cooke, Albert E.	54	E	E	E	E	B
Comish, Thos.	65	D	D	D	D	D
Creer, Oscar	70	A	B	A	A	B
Corlett, Thos.	66	C	C	C	C	C
Saccoia, Antonio	61	D	C	C	C	D
Kirschner, Thos.	63	A	D	D	D	B
Maas Mine.						
Gambotto, Jos.	73	A	A	A	A	B
Easterbrook, Thos.	72	A	A	A	A	A
Rogers, Henry F.	73	A	A	A	A	A
Hawke, Jas.	66	E	D	B	B	C
Negaunee Mine.						
Frederickson, John	70	C	B	B	B	C
Tregoning, John	71	A	B	B	B	A
Hares, Noah	70	E	D	D	D	A
Uren, Richard	72	D	B	B	B	B
Erickson, Victor	73	D	A	A	A	C
Mahoney, Wm.	52	E	E	E	E	E

A - Excellent. B - Very Good. C - Good. D - Fair. E - Poor.

The Educational Department was asked by the superintendents on several occasions preceding Aug. 1st for recommendations of men for the position of shift boss. In order that such recommendations could be intelligently made a record of the personal qualifications of each man has been kept. In table III, covering all men who are not already shift bosses, these qualifications are shown and in the last column the index letter represents the desirability of the man for the position of shift boss, as follows: A, would make a very good shift boss; B, would make an average shift boss; C, would be unsatisfactory as a shift boss.

Table III.

Name	Physique and Health	Personality	Common Sense	Reliability	Industry	Decision	General Desirability
Glanville, John	c	a	a	a	a	b	A
Harris, Wesley	a	a	b	a	a	b	C
Larson, Chas.	a	b	b	a	a	b	B
Maiden, Wm.	a	a	a	a	a	a	A
Latunen, Elias	a	a	b	b	a	c	C
Williams, Harclus	c	c	b	a	a	c	C
Hill, W. E.	a	a	a	b	b	a	A
Quayle, John J.	a	b	b	b	a	b	B
Cheynoweth, Francis	a	a	a	b	b	a	A
Cooke, Albert E.	c	c	b	b	b	c	C
Comish, Thos.	a	a	a	a	a	b	A
Creer, Oscar	a	b	a	a	b	a	A
Corlett, Thos.	b	a	a	a	a	b	A
Saccoia, Antonio	c	c	b	a	a	c	C
Kirschner, Thos.	a	a	a	a	a	c	B
Wilcox, Robert	a	a	a	a	a	c	B
Wilcox, Wm.	a	a	c	a	a	a	B
Traise, Richard	a	b	b	a	a	a	B
Mandley, Edw.	a	a	a	a	a	a	A
Tervo, John H.	a	a	a	a	a	c	B
Skewis, Herbert	a	a	a	b	b	a	A
Rogers, Henry F.	a	a	a	a	a	a	A

a - Very Good. b - Average. c - Unsatisfactory.

Table IV.

Expenses of Educational Department

for the year 1914.

Salary		$2340.00
Travelling Expenses		69.21
Livery		8.50
Equipment		124.63
Supplies		105.83
Books		66.95
Printing		207.40
Jackson Office Repairs		30.86
" "	Janitor	16.77
" "	Fuel	24.89
" "	Equipment	41.04
Miscellaneous		43.52
	Total	$3079.60

C. L. Stimson

1. Herbert Skewis
2. Francis Chynoweth
3. Wesley Harris
4. Nestor Erkkila
5. Victor Erickson
6. W. E. Hill
7. Elias Latunen
8. Jos. Gambotto
9. Oscar Creer
10. Thos. Corlett
11. Wm. Wilcox
12. Edw. Mandley
13. Thos. Comish
14. Harclus Williams
15. Robert Wilcox
16. John H. Tervo
17. Henry F. Rogers
18. Richard Traise
19. Wm. Maiden
20. John J. Quayle
21. Antonio Saccoia
22. Chas. Larson
23. John Glanville
24. Albert E. Cooke
25. Thos. Kirschner
26. John Frederickson
27. Thos. Easterbrook
28. John Freethy
29. C. S. Stevenson, Director.
30. Otto Schadt
31. Noah Hares
32. Fred Prudom
33. Jas. Hawke
34. Wm. Kennaugh
35. Richard Uren, absent
36. John Tregoning, absent
37. Wm. Mahoney, absent

CONCLUSION.

I desire to express my high appreciation of the work done by the heads of departments and their loyalty to the Company and to me. Their constant aim is not only to decrease costs, but also to improve the relations between the Company and the men. In this they are succeeding admirably, and I hope that the time will come when every man employed by the Cleveland-Cliffs Iron Company will feel that he has a personal as well as official relationship with the officers of the Company.

.....
Agent.