

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23.

d. VISITING NURSES (Continued)

Following is the report of the Negaunee Visiting Nurse for the year 1944:

Total number of patients cared for during year	1424
Number of new cases cared for during year	780
Total number of visits to patients	4749
Number of families visited for the first time	41
Number of social calls	731
Number died	1

Classification of new cases for the year:

Number of adults	327	Male	87	Female	240
Number of children	453	Male	249	Female	204

Nationalities of new cases for the year:

American	336	Italian	66
Austrian	3	Swedish	12
Finnish	360		
French	3		

Diseases and number of new cases:

Aenemia	6	Laryngitis	2
Appendicitis	14	Lumbago	1
Asthma	8	Mal-Nutrition	78
Bowel Trouble	22	Measles	22
Bronchitis	27	Migraine	1
Burns	5	Mumps	9
Carcinoma	1	Nephritis	1
Cervical Ad.	5	Obstactical	20
Cerebral Hem.	1	Otitis Media	3
Chicken Pox	18	Paralysis	3
Pertussis	7	Cholystitis	3
Cold	34	Pleurisy	1
Colic	3	Pneumonia	2
Cystitis	1	Post-Operative	60
Diabetes	1	Prggnancy	52
Eczema	7	Pyelitis	5
Epileptic	1	Quincy	2
Gastritis	1	Rheumatism	13
Gastr-Enteritis	38	Rupture	5
Gen. Debility	2	Scarlet Fever	8
Heart Trouble	6	Sore Eyes	5
Herpes Zoster	2	Sprains	4
Hypertension	1	Stomach Trouble	16
Infants, Newborn	22	Tonsillitis	58
Infections	44	Unclassified	14
Influenza	44	Undiagnosed	1
Injury	64	Var. Ulcer	4
Kidney Trouble	1	Whooping Cough	1

Visiting Nurse: Miss Ina E. Atkin.

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23.

d. VISITING NURSES (Continued)

Following is the report of the Gwinn Visiting Nurse for the year 1944:

Total number of patients cared for	788
Number of new cases	618
Total number of visits to patients	1402
Number of families visited for the first time	119
Number died	1

Classification of new cases for the year:

Number of adults	432	Male	205	Female	227
Number of children	186	Male	96	Female	90

Nationalities of new cases for the year:

American	554	Italian	24
English	1	Norwegian	1
Finnish	30	Swedish	3
French	5		

Diseases and number of new cases:

Bowel Trouble	27
Burns	.8
Chicken Pox	10
Cold	170
Eczema	3
Infants, Newborn	9
Infections	66
Injury	70
Mal-Nutrition	2
Measles	4
Obstetrical	7
Pleurisy	1
Rheumatism	4
Scarlet Fever	1
Sore Eyes	12
Sprains	14
Stomach Trouble	21
Tonsillitis	32
Unclassified	149
Undiagnosed	1
Var. Ulcer	1
Whooping Cough	6

Visiting Nurse: Mrs. Margaret Kemp.

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Visiting Nurses (Continued)

NUMBER OF PATIENTS ATTENDED AND CALLS MADE.

	<u>No. of Patients</u>	<u>No. of New Cases</u>	<u>Male Adult</u>	<u>Female Adult</u>	<u>Male Children</u>	<u>Female Children</u>
Ishpeming	825	441	26	154	101	160
Negaunee	1424	780	87	240	249	204
Gwinn	788	618	205	227	96	90
	<u>3037</u>	<u>1839</u>	<u>318</u>	<u>621</u>	<u>446</u>	<u>454</u>

	<u>Total No. Visits</u>	<u>Number Died</u>	<u>Social Calls</u>	<u>Families Visited for First Time.</u>
Ishpeming	4664	4	79	52
Negaunee	4749	1	731	41
Gwinn	1402	1	0	119
	<u>10815</u>	<u>6</u>	<u>810.</u>	<u>212</u>

NATIONALITIES OF NEW CASES.

	<u>American</u>	<u>Austrian</u>	<u>English</u>	<u>Finnish</u>	<u>French</u>
Ishpeming	292	0	12	56	6
Negaunee	336	3	0	360	3
Gwinn	554	0	1	30	5
	<u>1182</u>	<u>3</u>	<u>13</u>	<u>446</u>	<u>14</u>

	<u>Irish</u>	<u>Italian</u>	<u>Norwegian</u>	<u>Swedish</u>
Ishpeming	2	58	3	12
Negaunee	0	66	12	0
Gwinn	0	24	1	3
	<u>2</u>	<u>148</u>	<u>16</u>	<u>15</u>

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f. NORTH LAKE CLUB

The clubhouse at the North Lake location has continued its usual community service and activities throughout the year 1944. Mr. Dewey Urquhart continues in the position of director of the clubhouse. The Inland Steel Company cooperates with our company in the maintenance of the clubhouse and its operation. The club continues to serve the community as a center of all kinds of community activities. Practically every activity in the North Lake District centers in the North Lake clubhouse.

Following is a statement showing receipts and expenditures for 1944:

<u>RECEIPTS:</u>	<u>TOTAL FOR YEAR</u>
Membership Fees	\$320.00
Bowling Alleys	--
Pool and Billiards	77.80
Telephone Tolls	73.94
TOTAL	<u>471.74</u>
<u>EXPENDITURES:</u>	
Building Maintenance	60.18
Equipment	14.94
Lighting	98.74
Heating	535.02
Water	60.00
Pool Room	40.25
Office Expense - Telephone	144.96
Salaries and Wages	2,844.00
Reading Room	26.04
Miscellaneous	17.38
Personal Injury Expense	7.50
Unemployment and O.A.B. Taxes	66.80
Fire and Boiler Insurance	83.43
Commercial Bond Premium	2.29
TOTAL	<u>\$4,001.53</u>
Deficit	\$3,529.79
Billed to Inland Steel Company	960.00
Billed to Lloyd Mine	\$2,569.79

23.

g. GWINN ASSOCIATION.

The Club House is maintained through the financial assistance of The Cleveland-Cliffs Iron Company, the Cliffs Power and Light Company, and rental received from the local Board of Education and membership fees from residents of the community. Mr. E. L. Miller has continued as director in charge of all work.

The average monthly membership was 264, - a decrease of 19 over last year. 208 members were employed at the different mines and the remainder were employed elsewhere or held complimentary memberships.

Activities in the building were on a par with last year but were below pre-war periods. Indoor activities included bowling leagues for men and women; card playing facilities; library and reading room; a recreation room with pool, billiard and table tennis tables and other miscellaneous games. Rooms are provided for meetings, socials, and Red Cross activities. The gymnasium is fully equipped for class work or recreation, such as basketball, volleyball, handball, badminton, boxing, wrestling, and is used for dancing. Separate showers and locker rooms are provided for men and women.

Total number of meetings of a business, social, educational or recreational nature for year was 360; of this number 5 were annual events; church organizations used the building on 129 occasions; Scout troops held 41 meetings ; 17 dances were held; 44 meetings by Red Cross groups; and federal agencies, safety classes, women's organizations, men's Town Club, rehearsals for play, band and orchestra groups, and other events totalled 130. Equipment in club kitchen used on 93 occasions and equipment loaned for outside events 40 times.

The gymnasium was used 407 periods for supervised class work or recreational activities by High School students and adults. There were 124 scheduled basketball games, including leagues for boys and girls.

Outdoor activities were limited to softball, hardball, touch football and horseshoe pitching. Equipment was furnished to boys and girls in the different locations to cover the above. The estimated attendance, including participants for all outdoor activities and Bass Lake Camp was 9100.

During the year equipment and supplies were purchased to keep all departments functioning properly and the usual attention was given to the building to keep it in good repair. Special attention was given to the roof and new type backboards for basketball were installed in the gymnasium. New window shades were placed in the community meeting room; the bowling alleys were re-finished; and the gymnasium floor given a coat of seal-o-san.

The building and it's employees were always at the disposal of any project or campaign in the war effort.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

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g. GWINN ASSOCIATION (Continued)

The annual report of the Gwinn Association is herewith submitted:

Membership:

Number on roll January 1, 1944	277
Number on roll January 1, 1945	247
High membership for year - January	283
Low membership for year - December	247
A Average monthly membership	264

Attendance:

The attendance at the building showed a slight increase over the previous year but was not at the normal pre-war figure.

Total estimated attendance at building during year	72830
Average monthly attendance	6070
High monthly attendance - January	8525
Low monthly attendance - July	3400

Attendance for outdoor activities covers recreations at the different locations in the district. Equipment was placed at the different locations at a central place so all in that district could have easy access to it. Locations included Princeton, Austin, and New Swanzey and equipment included softball, hardball and football. The cottage at Bass Lake was operated as in previous years. The following estimated attendance covers all outdoor activities 9100

Financial Information: (from December statement.)

Total Receipts, including 1943 balance	\$ 6080.98
Total Expenditures for year	5462.01
Balance on hand Jan. 1, 1945	<u>618.97</u>

Buffet, Billiards, and Bowling:

Receipts for year	
Expenditures for year	1342.00
	<u>964.09</u>
Profit	\$ 377.09

Receipts from membership and rentals \$3803.00

General Activities and Organizations Using Building:

- 15 Committee meetings.
- 18 meetings Women's card groups
- 14 Meetings Women's Study Club.
- 11 meetings Federal Agencies.
- 44 Meetings Red Cross working groups.
- 13 meetings Daughters of Isabell - 1 Rummage sale- 1 Christmas Party.
- 7 meetings Men's Town Clubs.
- 15 meetings Women's Guild - 1 Christmas party.
- 10 meetings Finnish Lutheran League.
- 11 sessions Church school.
- 15 rehearsals for different plays.
- 21 rehearsals by Club Band - 3 engagements.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23. g. GWINN ASSOCIATION (Continued)

General Activities and Organizations Using Building. (Continued)

- 22 meetings Methodist Church Circle - 35 Choir rehearsals - 4 church suppers - 14 meetings Youth Fellowship - 1 Carnival to raise funds for Circle.
- 17 dances held - 1 special for polio fund - 1 invitation dance by Town Club - 1 open dance - 12 for Senior High School students - 2 all-girl dancing parties.
- 9 classes C. C. I. Co., safety program.
- 6 meetings Sportsmen's Association.
- 2 Card Parties by Girl Scouts to raise funds.
- 2 Married Folks parties.
- 1 Annual Dinner and meeting Banker's Association.
- 2 Gift Wedding Showers.
- 3 Meetings Beagle Club.
- 1 Annual Christmas Party by Girl Scouts.
- 1 Annual Christmas Treat for Children.
- 93 lunches served by different organizations.
- 40 times- equipment loaned for outside events.
- 1 Open House New Year's Eve party.

Library and Reading Room:

Library books loaned during year			1294
New Books added (new)			48
Weekly magazines received	6	Daily newspapers	2
Monthly magazines received	23	Weekly newspapers	3

Recreation Room:

This room has had more use during the past year because of the closing of one of the local taverns which had permitted young folks to congregate there. This room is equipped with pool, billiard, and and table tennis tables and other miscellaneous games.

Bowling:

The Association conducted leagues for both men and women in bowling and both leagues completed their schedules. 57 classes were conducted for High School students gratis as part of their physical training program.

Physical Recreation and Athletic Department:

This includes all activities in the gymnasium whether they were under the High School or Club supervision, and all outdoor recreations; such as furnishing equipment at different locations and school playground; hardball and football equipment for miscellaneous use as there were no regular leagues conducted.

23.

g. GWINN ASSOCIATION (Continued)

Physical Recreation and Athletic Department. (Continued)

Summary

	<u>Periods</u>	
High School classes (Girls)	139	3685
High School Classes (Boys)	143	2664
High basketball practice	79	882
Boys basketball League	17	886
Girls' " "	10	228
Junior Boys	11	296
Boys volleyball	9	399
Senior members, volleyball and badminton	8	48
	407	9088.

Basketball Games Under High School or Club Supervision:

High School played 7 games at home and 7 games away from home - winning one game at tournament at Marquette.

Boys High league and local tournament	74 games
Girls' High league	38 games
Junior Boys	12 games

Attendance at all games 5500.

High School annual physical education demonstration - 170 participants 225 spectators.

Attendance at all outdoor recreations, including activities at different locations, school playground and small playground at Club, covering softball, hardball, touch football and horseshoe pitching . . . 7700.

The tennis court was placed in condition but no interest was manifested.

Bass Lake - Season 1944.

The Cottage was opened May 20th and closed October 23rd.

The large dock was rebuilt and 3 boats overhauled and painted.

It was impossible for those in charge to keep an account of the number of persons using the bathing facilities and grounds, as the gas situation was such that they were unable to visit the lake as in other years; however, by contacting the people using the cottage an estimate was taken from their observations.

Club members were permitted to use boats and cottage free of charge.

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g. GWINN ASSOCIATION (Continued)

Bass Lake -

<u>Summary - Actual Use of Cottage</u>	<u>Attendance</u>
Ex-Servicemen's Annual Supper	26
School class picnics (6)	188
Negaunee City Band picnic	30
Negaunee Mine Shift Bosses picnic	20
Girl Scouts- 5 days	16
Gwinn Fireman Annual Picnic	50
Sportsmen's annual rabbit supper	50
8 different families used cottage from one day to 7 days	60

Estimated number using grounds for basket picnics, boating, bathing and fishing 1400

GIRL SCOUTS

The Scouts continue to serve in any capacity where their services are needed to help the war effort. They collect the fats from homes and assist the Red Cross.

- 41 meetings attendance 841.
- 3 hikes - 1 skating party.
- 7 fat collections
- 5 social parties with dinner or lunch.
- 2 field trips with lunch.
- 2 overnight camping trips.
- 2 card parties to raise funds.

Troop observed Scout Week, attending church services in a group in uniform-assisted with Memorial Day services - twice made articles for veterans at Hospital in Battle Creek; held Valentine party; annual Christmas party; assisted at Community Treat for children; collected at Theatre for Red Cross drive. Spent 5 days at Bass Lake on annual camp trip. The above was extra work beside their regular class activities in preparation for merit badges.

Building.

The Club House operates under the same financial arrangements as in previous years. The Cleveland-Cliffs Iron Company renders financial assistance and supervision; the Cliffs Power & Light Company grants free service, and the local Board of Education, under a contract agreement, pays rental for the use of the building and equipment for their physical training program and for social activities, including dancing.

During the year rooms needing re-decorating were given the necessary attention. Floors in recreation room, library, community room and stairways were re-varnished and waxed. The gymnasium floor was treated with seal-o-san and new backboards were installed for basketball. Bowling alleys were re-finished and pins purchased. All basement floors including locker rooms and showers were painted.

23.

h. ISHPEMING Y.M.C.A. BUILDING

For the past few years we have continued to mention the Ishpeming Y.M.C.A. building in our annual reports. Very little in addition to what has been reported in previous years can be added. The Ishpeming Industrial Association is interested in re-opening the building as a sort of community center. Within recent weeks the building has been surveyed by the American Recreation Association and a report is to be submitted by the American Recreation Association concerning the use of the building as a community center after the war.

As has been pointed out in my annual report before, the need for the re-opening of the Y.M.C.A. is still somewhat doubtful. Certainly there should be some type of program definitely organized on a community needs basis before the building is re-opened. In other words, if the right kind of program can be organized in the community, undoubtedly the Y.M.C.A. building can be used to advantage. It seems unreasonable, however, to open the building merely for the sake of having a community building. The re-opening of this building should depend entirely upon a well organized and planned program.

23.

i. SAFETY WORK

During the year 1944 the Central Safety Committee held several meetings under the direction of Mr. A. J. Stromquist, Safety Director. At each of these meetings a general discussion is had of all accidents which have occurred in the mines and a study is made of the possibility of preventing a like accident in the future. Each accident is definitely classified. During 1944 meetings were held on the following dates:

March 20
June 12
September 14
December 13

The meetings are held on the third floor of the main building, which we call the assembly room. These meetings cover generally a two or three-hour discussion period and occasionally are attended by the captains of the various mines. The minutes of each meeting are prepared by this department and the discussion is recorded. It is felt that these meetings are very practical and helpful. Constant stress is placed on the need for continuing good safety practices and for the prevention of accidents.

The following are members of the committee:

H. O. Moulton, Chairman
C. J. Stakel
C. W. Allen
Carl Brewer
Walter F. Gries
A. J. Stromquist
W. E. Johnson
H. F. Rogers
J. D. Preston
L. C. Moore
E. D. Cory
F. J. Haller
Onnie Marjama
S. W. Sundeen
Ernest Keast
W. R. Atkins
John Trosvig
J. S. Westwater
Curtis Sundeen
H. W. Sundberg
Dr. George McL. Waldie

The regular report of the Safety Department will be found in Mr. Stromquist's annual report.

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j. HOSPITALS AND MEDICAL SERVICE

The Welfare Department maintains daily contact with the Ishpeming Hospital and the Negaunee Dispensary. The Ishpeming Hospital Advisory Administrative Committee meets the second Tuesday of each month and the following men make up the committee: Mr. C. W. Allen, Assistant Manager; Mr. E. E. Riedinger, Chief Clerk; Mr. Walter F. Gries, Superintendent, Welfare Department. At each meeting Dr. A. W. Erickson, Chief of Staff is present, as is Mrs. Margaret Berg, Acting Superintendent of the hospital.

Periodic visits are made to the Gwinn District and three or four times a year contacts are made in the Iron River District with Dr. Irvine who takes care of our medical needs in that area and the hospital at Stambaugh is also visited. An effort is made each year to attend the meeting of the board of the Hospital of the Iron River District.

Effective January 1, 1944 the monthly medical fee was raised to \$1.50.

We have fewer doctors at this present time than we have had in a great many years. Presently we have only two doctors in Ishpeming, one at Negaunee, one at Gwinn, and Dr. Irvine takes care of our medical needs in the Iron River District. Dr. R. A. Burke takes care of the medical needs of the Cambria-Jackson employees, but without doubt our medical practice at the present time is too large for our present staff of doctors to take care of properly. It is hoped that within the near future some revision of our present medical plan may be made.

ISHPEMING HOSPITAL

The Ishpeming Hospital has had another busy year during 1944. Service is extended not only to our own employees and their families but to the community at large and to other communities outside the district. The hospital continues to maintain its high standard and has again been granted membership in the American Hospital Association and in the American College of Surgeons.

Miss Georgia Holmes, R.N., who has been Superintendent for the past few years, resigned a few months ago and we were fortunate in securing the services of Mrs. Margaret Bilkey Berg, who formerly served as Superintendent. Her services became available since she is staying in Ishpeming, which is her home, while her husband is in the military service. We have maintained a very creditable staff of nurses at the hospital in spite of the fact that nurses are rather difficult to employ. We have revised the program with respect to the work of the orderlies and the new assignment program seems to be working out very satisfactorily. Thus far we have gotten along better than most hospitals from the standpoint of the availability of maids and helpers.

As pointed out in previous reports, it is sometimes felt that the people of this community and surrounding communities do not fully appreciate the real value of the Ishpeming Hospital as a community asset. The hospital is owned, operated, and maintained entirely by the Cleveland-Cliffs Iron Company, with the

23.

j. HOSPITALS AND MEDICAL SERVICE (Continued)

assistance of cooperating and coordinating companies. The community, however, does not contribute to the hospital in any way. Most people, I believe, feel that the Cleveland-Cliffs Iron Company is making a very fine contribution to the general welfare and the health of the entire community through the services rendered by the Ishpeming Hospital and our medical staff and nurses. However, in most communities of this size some obligations are placed upon the community with respect to the support and maintenance of a hospital. Sometime some effort should be made to secure some community assistance towards the maintenance of a hospital program in this community and in surrounding communities. It is recognized that the general health of the community, which, of course, includes all of our own employees, is one of the greatest assets which the Company has. I feel also that the value of our hospital is definitely reflected in a public relations manner and I personally feel that the maintenance and continued support of the hospital is a great asset to the Company, as well as to the community.

The Hospital Advisory Administrative Committee, which has met regularly every month and which was previously referred to, has familiarized itself with some of the problems which arise in the conducting of the business of a hospital. Mr. G. R. Jackson, former General Superintendent, served on this committee previous to his retirement and we wish to express here our appreciation for his assistance and cooperation over a long period of time. The committee has been interested in becoming familiar with hospital problems and they have worked very diligently. I wish at this time to express my appreciation for their cooperation and assistance. This committee has been functioning now for over three years and an opportunity is provided for at least three men in an advisory capacity with the Company to become familiar with problems connected with hospital administration.

The staff of the Ishpeming Hospital during the year 1944 was made up of the following doctors:

Dr. A. W. Erickson, Chief of Staff
 Dr. P. P. Hartt
 Dr. W. A. Corcoran (Dr. Corcoran left our employ
 in August to practice privately in Ishpeming)

At one time we had five doctors at the Ishpeming Hospital but since the emergencies which war has brought us it has been practically impossible to replace the doctors who have left our service since the war started. The staff at the Negaunee Dispensary is made up of the following:

Dr. W. A. Mudge
 Dr. J. D. Sarven
 Dr. H. J. Treshler

Dr. Sarven left our employ in February of 1944 and in June of 1944 he was succeeded by Dr. H. J. Treshler. We are now transferring Dr. Treshler to the Gwinn District, so that presently we have only Dr. Mudge at the Negaunee Dispensary.

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j. HOSPITALS AND MEDICAL SERVICE (Continued)

Dr. R. A. Burke, who maintains his own hospital in Negaunee, continues to serve our Cambria-Jackson employees by agreement. We allow Dr. Burke the \$1.50 per month paid by each of the Cambria-Jackson employees for medical attention and we also supplement this with \$1.00 per man per month to assist Dr. Burke in the maintenance of his hospital.

A special report is attached to this general report, giving information regarding the operation of the Ishpeming Hospital for 1944.

The Ishpeming Hospital was opened in 1918. It has always been the purpose and the program of the Ishpeming Hospital to give the employees of the Cleveland-Cliffs Iron Company and their families and the participating companies in the district the best possible hospital and medical service. The hospital is operated as a separate unit of business and as far as the Company is concerned, the supervision of the hospital is carried on through the Welfare Department. The Welfare Department has been assisted in recent years by the Hospital Advisory Administrative Committee, previously mentioned.

The Ishpeming Hospital has taken care of the needs of this community and is still doing so but at times in recent years it has been found that the facilities are inadequate because of the fact that people have become definitely more hospital conscious. Every effort is made to provide for the care of our own people first and we always reserve at least two beds, regardless of what conditions may be, for possible mine injuries. At the present time we are listing the hospital as having a capacity of 52 beds and 18 bassinets. There is a closed medical staff and a complete nursing staff, made up of only graduate nurses.

It has been our purpose and plan to continue as far as possible improvement of grounds, building, and equipment each year. During 1944 some new pieces of equipment were added and we hope to continue the program of remodeling and repairing ceilings as soon as the war is over. Our hospital is well equipped with x-ray apparatus, laboratory facilities, surgical equipment, operating room equipment, as well as excellent equipment for diathermy treatments and for injuries. The emergency treatment room on the first floor of the hospital is a very busy place. All minor injuries and ordinary treatments of patients are taken care of in this room.

The admission and enrollment statistics of 1944 indicate that the hospital has been quite fully used. Each year it is pointed out in our annual reports that the future hospital needs of the community probably cannot be taken care of at the Ishpeming Hospital unless additional space is provided. During 1944 we found it necessary to install a second obstetrical division on the second floor. A battery of three rooms, formerly used as nurses' quarters, were partitioned off and have been placed in use as the second floor obstetrical department. This has helped a great deal since many more obstetrical cases have been taken care of during the past few years than was formerly the case.

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j. HOSPITALS AND MEDICAL SERVICE (Continued)

The hospital building is in good condition. Three years ago the building was weather-stripped and with the exception of the ordinary repairing and re-decorating which has to be done, the building requires little attention.

In our report for 1942 we listed the hospital accounts receivable for 1938 to 1942, inclusive. In 1938 the accounts receivable amounted to \$35,546.11. In 1942 they had dropped to \$19,918.93. For the year 1943 the accounts receivable amounted to \$18,096.45, and for 1944 they amounted to \$20,417.08.

The operating revenue for the twelve months of 1944 amounted to \$58,854.27. The uncollectible accounts for 1944 amounted to \$456.69. During the year 1944 the hospital collected 99.225 cents out of every \$1.00 worth of work done.

It is desired to record here the appreciation of the Welfare Department to the participating companies in the district for the cooperation and support they have given the Ishpeming Hospital.

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

GOVERNING BOARD

E. B. Greene, President
C. J. Stakel, Manager
Walter F. Gries, Superintendent, Welfare Department

ADVISORY COMMITTEE

C. W. Allen
E. E. Riedinger
Walter F. Gries, Secretary and Chairman

ACTIVE MEDICAL STAFF

A. W. Erickson, M.D., President	W. A. Corcoran, M. D.	(1)
P. P. Hartt, M.D.	G. McL. Waldie, M.D.	
W. A. Mudge, M.D.	J. D. Sarven, M.D.	(2)
	H. J. Treshler, M.D.	(3)

COURTESY STAFF

V. H. Vandeventer, M.D.
P. Van Riper, M.D.
I. Sicotte, M.D.
F. O. Paull, M.D.

CONSULTING STAFF

A. W. Erickson, M.D.

DEPARTMENTS

Laboratory and Roentgenology

A. W. Erickson, M.D.

Anesthesia

P. P. Hartt, M.D.

Gwinn Dispensary

J. D. Sarven, M.D. (Part Time)
H. J. Treshler, M.D. (Part Time)

Histories

A. W. Erickson, M.D.

Negaunee Dispensary

W. A. Mudge, M.D.
J. D. Sarven, M.D.
H. J. Treshler, M.D.

Industrial Hygiene

Geo. McL. Waldie, M.D.

- (1) Resigned August 1, 1944. Private Practice.
- (2) Resigned February 15, 1944
- (3) Joined staff June 1, 1944

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23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

PERSONNEL AS OF DECEMBER 31, 1944

Dr. A. W. Erickson	Chief of Staff	Agnes Person	General Duty
Dr. P. P. Hartt		Mathilda Strand	General Duty
Dr. Geo. McL. Waldie	Industrial Hygiene Department	Katherine Levy	General Duty
Margaret Berg	Superintendent	Mary Beauchamp	General Duty
Edgar Holmgren	Pharmacist	Dollie Weiser	General Duty
Arvid Linna	Pharmacist	Martha K. Bennett	General Duty
E. C. Holmgren	Cashier	Phyllis Sarousky	General Duty
E. Anne Ruhl	Dietitian	Fritz Ring	Orderly
Myrtle Welander	Visiting Nurse	Harry Gall	Orderly
Frances Harrington	General Duty	Charles Larson	Orderly
Golda Lindberg	General Duty	Matt Heikkinen	Garage
Mary Ann Devine	Supt. Operating Room	John Williams	Janitor and Fireman
Germaine Myllymaki	Supt. Emergency Room	Anita Holmgren	Office Girl
Audrey Nicholls	General Duty	Eileen Cahill	Office Girl
Norma Rundman	General Duty	Donna Johns	Secretary, Ind. Hygiene Dept.
Marian Silas	Physio-Therapy	Joyce Maddern	Historian
Florence Tregoning	General Duty	Tillie Wallenstein	Cook
Evelyn Tassone	General Duty	Leona Rule	Waitress
Violet Vanni	General Duty	Lucille Tremayne	Diet Kitchen, 3rd.
Mary Johns	General Duty	Charlotte A. Quaal	Office Girl (Relief)
Aune Wilson	General Duty	Sally Manthei Rose	Laboratory & X-ray
Ruth Pasander	General Duty	Kathryn Bublick	Laboratory

Negaunee Dispensary

Dr. W. A. Mudge		John Roberts	Caretaker
Dr. H. J. Treshler	Gwinn Dispensary (Part Time)	Catherine Haupt	Nurse
Ina Atkin	Visiting Nurse	Edna Westerlund	Nurse

Gwinn Dispensary

Margaret Kemp	Nurse
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WELFARE DEPT. ANNUAL REPORT YEAR 1944

23.

j. HOSPITALS AND MEDICAL SERVICE (Continued)

RELIEF NURSES, 1944

Germaine Myllymaki	General Duty	Days Worked	142
Ruth Johnson	General Duty	Days Worked	149
Norma Rundman	General Duty	Days Worked	152
Florence Tregoning	General Duty	Days Worked	152
Golda Lindberg	General Duty	Days Worked	152
Mary Johns	General Duty	Days Worked	251
Katherine Levy	General Duty	Days Worked	198 $\frac{1}{2}$
Theresa Trotochaud	General Duty	Days Worked	109
Martha Bennett	General Duty	Days Worked	105
Muriel Gauthier	General Duty	Days Worked	211
Evelyn Tassone	General Duty	Days Worked	213
Marian E. Silas	General Duty	Days Worked	135
Fannie Pirkola Betts	General Duty	Days Worked	52
Helen Heikkanen	General Duty	Days Worked	31
Kate Seidwitz	General Duty	Days Worked	31
Lavinia Brewer	General Duty	Days Worked	21
Agnes C. Person	General Duty	Days Worked	150
Aileen Johnson	General Duty	Days Worked	176
Ragna Lokken	General Duty	Days Worked	34 $\frac{1}{2}$
Winifred Stickney	General Duty	Days Worked	2
Mildred Rundman	General Duty	Days Worked	8
Mona Collins	General Duty	Days Worked	33 $\frac{1}{4}$
Viola Lehtinen	General Duty	Days Worked	19 $\frac{1}{2}$
Nora Hares	General Duty	Days Worked	2
Mathilda Strand	General Duty	Days Worked	275
Agnes Lois Argall	General Duty	Days Worked	216
Elsie Homburg	General Duty	Days Worked	143
Aune Wilson	General Duty	Days Worked	142
Edith Uimari	General Duty	Days Worked	89
Ruth H. Green	General Duty	Days Worked	31
Phyllis T. Sarousky	General Duty	Days Worked	39
Ruth M. Pasander	General Duty	Days Worked	14
Margaret Langlois	General Duty	Days Worked	3
Alice F. Nowell	General Duty	Days Worked	25
Mrs. Nellie Daly	General Duty	Days Worked	4
Mae Piirto Whiting	General Duty	Days Worked	1
Lillian R. Hoff	General Duty	Days Worked	1
Mary E. Beauchamp	General Duty	Days Worked	92
Dollie Weiser	General Duty	Days Worked	61
Ronnie Elson	General Duty	Days Worked	6

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

Day Workers, Ishpeming Hospital
as of December 31st, 1944

Lyda Turgeon	Laundry	Full time
Beatrice Pryor	Laundry, Sewing, Cleaning	Full time
Lorraine Kelly	Laundry	Full time
Marie Eckloff	Laundry	Full time
Viola Lafreniere	Laundry	Full time
Lena Maki	Laundry	Part time
Ruby Wood	Laundry, Cleaning	Full time
Olga Norell	Night Cook	Part time
Lorraine Jenkin	Main Kitchen	Part time
Hilda Dolkey	Main Kitchen	Part time
Joyce Peterson	Main Kitchen (Relief)	Part time
Shirley Lindberg	Main Kitchen	Part time
Albina George	Main Kitchen	Full time
Saima Nuorala	Main Kitchen (Relief)	Part time
Elizabeth Ayotte	Main Kitchen	Part time
Alzira Gibbs	Kitchen, 3rd Floor	Full time
Carol Lind	Diet Kitchen, 2nd Floor	Part time
Arlene Bess	Diet Kitchen, 2nd Floor	Part time
Carol Tonkin	Diet Kitchen, 2nd Relief	Part time
Ann Kunnari	Cleaning	Full time
Marian Roberts	Cleaning, 2nd Floor	Full time
Grace Nelson	Cleaning, 2nd Floor Relief	Part time
Lorraine Ameen	Cleaning, 2nd Floor	Part time
Carol Wood	Cleaning, 3rd Floor	Full time
Joanne Champion	Maid, 3rd Floor	Part time
Violet Ruohomaki	Kitchen, 2nd Floor	Full time
Mildred Hart	Cleaning, 3rd Floor	Part time
Lillian Pepin	Cleaning, 2nd Floor	Full time
Gladys Poirier	Kitchen, Relief	Part time
Emily Husby	Cleaning, 1st Floor	Part time

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

CHANGES IN PERSONNEL, 1944

Dr. W. A. Corcoran	Ishpeming Hospital	Resigned August 1, 1944
Dr. J. D. Sarven, Jr.	Negaunee Dispensary	Resigned Feb. 14, 1944
Dr. H. J. Treshler	Negaunee Dispensary	Joined staff June 1, 1944
Georgia Holmes, R. N.	Supt. Ishpeming Hospital	Resigned September 25, 1944
Margaret B. Berg, R. N.	Supt. Ishpeming Hospital	Joined staff September 25, 1944
Bernice Johnson	X-ray and Laboratory	Resigned August 1, 1944
Alice Shields	X-ray and Laboratory	Resigned August 1, 1944
Sally M. Rose	X-ray and Laboratory	Joined staff Sept. 5, 1944
R. Kathryn Bublick	Laboratory	Joined staff Sept. 11, 1944
Mary Grosso Quinn	General Duty	Leave of absence, Sept 1, 1944
Mary Ann Devine	Physio-Therapy	Supt. of O.R. May 1, 1944
Edna Westerlund	General Duty	Joined staff Feb. 7, 1944
Edna Westerlund	Negaunee Dispensary	July 10, 1944
Germaine Myllymaki	General Duty, E.O.R.	Joined staff June 1, 1944
Ruth Johnson	General Duty	Joined staff June 1, 1944
Ruth Johnson	General Duty	Discharged June 30, 1944
Golda Lindberg	General Duty	Joined staff June 1, 1944
Norma Rundman	General Duty	Joined staff June 1, 1944
Marian E. Silas	General Duty	Joined staff June 1, 1944
Marian E. Silas	Physio-therapy	September 1, 1944
Florence Tregoning	General Duty	Joined staff June 1, 1944
Evelyn Tassone	General Duty	Joined staff Aug. 1, 1944
Mary Johns	General Duty	Joined staff Oct. 1, 1944
Aune Wilson	General Duty	Joined staff Oct. 1, 1944
Ruth M. Pasander	General Duty	Joined staff Oct. 1, 1944
Eileen Lodholz	Historian	Resigned Sept 1, U.S. Navy
Bernice Larson	Sec't. Ind. Hygiene	Resigned June 5, 1944
Katherine Mohrhardt	Sec't. Ind. Hygiene	Began June 5, 1944
Katherine Mohrhardt	Sec't. Ind. Hygiene	Resigned Nov. 2, 1944
Donna Johns	Sec't. Ind. Hygiene	Began Nov. 15, 1944
Marian Westermeyer	Historian	Began July 17, 1944
Marian Westermeyer	Historian	Resigned Aug. 12, 1944
Gladys Joyce Maddern	Historian	Began Aug. 14, 1944
Betty Jean Holmgren	Historian & Office Girl	Trans. Main Office Feb 4, 1944
Kenneth Hallstead	Fireman & Night Garage	Trans. to Lab. Feb. 12, 1944
Elmer Erickson	Fireman & Night Garage	Began Feb. 14, 1944
Elmer Erickson	Fireman & Night Garage	Trans. April 30, 1944
Theresa Maki	2nd Floor Diet Kitchen	Resigned Feb. 29, 1944
Charlotte Anne Quaal	Office Girl (Relief)	Began Sept. 8, 1944
Mrs. Irene Johnson	X-ray & Lab. (Relief)	December, 1944

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

ISHPEMING HOSPITAL
STATISTICAL REPORT FOR THE YEAR 1944

Number of patients remaining in the hospital at beginning of year		36
Number of adult patients admitted	892	
Number of child patients admitted	98	
Number of births	<u>379</u>	
Total new patients for year 1944		1369
Total of all patients for year 1944		1405
Number of deaths	70	
Number discharged during year	<u>1304</u>	
Total number leaving hospital		1374
Number of patients remaining at the end of the year 1944		31
Classification of new cases:		
Newborn	379	
Surgical	314	
Medical	264	
Obstetrical	<u>412</u>	
Total		1369
Number of operations		423
Number of emergency room operations		344
Number of patient days:		
Baby days	2615	
Others	<u>13346</u>	
Total		15961
Average number of patients per day		43.60

NUMBER OF FRACTURE CASES DURING 1944

Cleveland-Cliffs Iron Company		79
Outside Cases		78
Inland Steel Company		14
Hercules Powder Company		4
Oliver Iron Mining Company		<u>4</u>
Total		179

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

DEATHS FOR 1944 CLASSIFIED BY DISEASE

Arteriosclerosis.....	1
Atelectasis.....	1
Birth Injury.....	1
Breech Presentation.....	1
Bronchial Pneumonia.....	1
Carcinoma.....	1
Carcinomatosis.....	1
Cardiorenal Disease.....	1
Cerebral Concussion.....	1
Cerebral Hemorrhage.....	8
Chronic Nephritis.....	1
Cirrhosis of the Liver.....	1
Congenital Atelectasis.....	1
Congestive Heart Failure.....	1
Coronary Occlusion.....	4
Coronary Stenosis.....	1
Coronary Thrombosis.....	1
Diabetes Mellitus.....	2
Hemorrhage, concealed.....	1
Hemorrhage, gastric.....	1
Myocarditis.....	7
Peritonitis, General.....	1
Pneumonia.....	1
Premature.....	8
Pulmonary Thrombosis.....	1
Silica Tuberculosis.....	1
Stillborn.....	15
Strangulated right hernia.....	1
Subacute Nephritis.....	1
Terminal Pneumonia.....	2
Traumatic Shock.....	<u>1</u>
Total	70

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

DEATHS DURING THE YEAR 1944

Surgical.....	37
Medical.....	2
Traumatic Injuries.....	5
Newborn.....	11
Stillborn.....	<u>15</u>

Total 70

Deaths under 48 hours.....	24
Deaths over 48 hours.....	31
Stillborn.....	<u>15</u>

Total 70

TRAUMATIC DEATHS

<u>Case No.</u>	<u>Patient</u>	<u>Age</u>	<u>Diagnosis</u>
24447	Mr. Frank Millman	84	Fractured left hip with shock. Arteriosclerosis with hypertension.
24476	Mr. Julius LaFreniere	23	Fracture of the 12th dorsal vertebrae, 8, 9, 10, and 11th ribs on left, 11th rib on right. Retroperitoneal hemorrhage. Traumatic shock.
24739	Mrs. Katherine Tamblin	76	Chronic nephrosis. Diabetes Mellitus. Fractured pelvis. Fractured hip.
24932	Mr. Isaac Luomanen	70	Head injury. Terminal pneumonia.
25130	Mrs. Eliza Dunstan	63	Result of falling downstairs. Cerebral concussion. Fracture-Colles' right forearm, severe bruises on head and body.

23.

j. HOSPITALS AND MEDICAL SERVICE (Continued)

LABORATORY REPORT FOR 1944

Blood Sugar.....	63
Blood Cultures.....	4
Coagulation Time.....	174
Differential Count.....	407
Feces.....	44
Gastric Contents.....	11
Haemoglobin-Haden Hausser.....	1155
Parasites and Ova.....	4
Red Cell Count.....	1223
Smears.....	64
Special Blood Exam.....	3
Pertussis Agglutination.....	4
Sputum.....	2
Urinalysis.....	3615
Sedimentation.....	42
Leucocyte Count.....	1004
Blood Typing.....	113
Blood Matching.....	45
Vena Punctures for Kahns.....	299
E K G.....	89
Glucose Tolerance.....	3
Acetone.....	152
Sulfa Level.....	47
Blood Chem. to Houghton.....	54
Hematocrite.....	9
Bleeding Time.....	1
Feces to Houghton.....	4
Urine to Houghton.....	3
Sputum to Houghton.....	2
Pleural fluid to Houghton.....	1
Pregnancy Test.....	4
R. H. Factor.....	8
Phenolsulphonaphthelein Test.....	4
Potassium Thiocyanate.....	9
Widal.....	2
	<u>8568</u>

Pathological Specimens to Ann Arbor.....	194
	<u>8762</u>

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

TREATMENTS FOR THE YEAR 1944

Basal Metabolism.....	75
Ultraviolet Ray.....	223
Infrared.....	75
Diathermy.....	1358
Dressings.....	85
Cautery.....	61
Massage.....	216
Intra-muscular Injections.....	57
Subcutaneous Injections.....	<u>28</u>

2178

DEPARTMENT OF INDUSTRIAL HYGIENE

January, 1944 to December, 1944

Blood Sugar.....	10
Differential Count.....	150
Haemoglobin-Haden Hausser.....	2170
Parasites and Ova.....	1
Red Cell Count.....	95
Smears.....	2
Urinalysis.....	2235
Sedimentation.....	2170
Acetone.....	12
Leucocyte Count.....	2171
Blood Typing.....	1
Vena Punctures for Kahns.....	2177
Glucose Tolerance.....	12
Blood Chem. to Houghton.....	<u>13</u>

11,219

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

X-RAY REPORT FOR 1944

Extremities.....	719
Shoulder.....	81
Spine.....	130
Ribs.....	54
Skull.....	37
Intra Pyelo.....	1
Kidney.....	10
Pelvis.....	59
Stomach Series.....	34
Fluora.....	3
Foreign Body.....	7
Colon.....	5
Mastoid.....	0
Abdomen.....	7
Chest and Heart.....	213
Jaw.....	13
Sinuses.....	2
Sternum.....	1
Fetus.....	69
Gall Bladder.....	<u>49</u>
Total	1494

No. of Out Patients.....	297
No. of In Patients.....	<u>1105</u>
Total	1402

SARANAC INVESTIGATION

Chests.....	2267
Miscellaneous.....	<u>4</u>
Total	2271

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

DIETARY REPORT--ISHPEMING HOSPITAL--YEAR 1944

Patients' Meals.....	40038
Doctors, Nurses, Employees, Visitors.....	26395
Total Meals for the Year.....	66433
Formulas.....	379

Special Diet--Patient Days:

Salt Free.....	224
Special Soft.....	165
Diabetic.....	300
Ulcer.....	4
Fat Free.....	115
Reduction.....	17
Salt Poor.....	17
High Protein, High Vitamin.....	5
Selective.....	42
High Vitamin.....	17
High Protein.....	57
Post Operative Gastric Ulcer.....	24
Nephritic.....	55
High Calorie.....	21
Bland.....	63
Low Fat.....	75
Modified Sippy.....	19
Dry.....	51
Hypertension.....	25
Allergy.....	26
Sodium Free.....	7
High Carbohydrate.....	9
Sippy.....	89
Neutral.....	4
Initial Ulcer.....	7
Fuse Ulcer.....	29
Low Protein.....	66
Ground Light.....	4

Total Special Diet Patient Days.....	1537
Total Special Diet Meals.....	4611

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

Total Major Operations.....100	
Laparotomy, Exploratory.....	5
Laparotomy with Appendectomy.....	3
Appendectomy & Oophorectomy.....	1
Appendectomy & Repair of portion of Omentum.....	1
Closure of Gastric Ulcer & Appendectomy.	1
Repair of Perforated Gastric Ulcer.....	1
Appendectomy & Cholethectomy.....	1
Appendectomy & Removal of Chocolate Cyst.....	1
Appendectomy & Partial Oophorectomy.....	1
Excision of Teratoma of Left Ovary Salpingectomy Oophorectomy & Appendectomy.....	1
Salpingectomy & Oophorectomy.....	2
Cholecystectomy.....	1
Appendectomy.....	40
Caesarian Section.....	3
Herniotomy.....	26
Open Reduction	
Ankle.....	1
Index Finger.....	1
Insertion of Kirschner Wire-Patella.....	1
Wiring of Patella.....	2
Application of Stater Splint.....	1
Manipulation of Fracture.....	1
Ununited Fracture of Internal Malleolus of Right Ankle.....	1
Avulsion of Tuberosity of Oscalsis of Left Foot.....	1
Bone Graft-Cast-Left Arm.....	1
Exploration for Foreign Body.....	1
Hip	
Skin Graft - Hip.....	1
Breast Amputation.....	1

Total Minor Operations.....180	
Blood Transfusion.....	23
Venasection.....	3
Tonsillectomy.....	27
Tonsillectomy & Adenoidectomy.....	56
Tooth Extractions.....	2
Curretage.....	2
Cervical Packing.....	1
Aspiration	
Chest.....	5
Knee.....	1
Excision of Cysts	
Breast.....	2
Labia Majora.....	1
Back-Lipoma.....	1
Thoracentesis.....	1
Hemorrhoidectomy.....	1
Cautery Anal Region.....	1
Repair Anal Fistula.....	2
Repair Hydrocele.....	4
Perineorrhaphy.....	3
Incision & Drainage	
Left Arm.....	1
Ankle.....	1
Bartholin Gland.....	2
Perineal Abscess-Buttock.....	1
Circumcision	
Adult.....	1
Child.....	5
Total Infant Circumcisions.....	143
Total Minor Operations	180
Total Major Operations	100
Total Infant	
Circumcisions	143
Total	423

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

EMERGENCY ROOM REPORT

	<u>Company Cases</u>	<u>Outside Cases</u>	<u>Total Cases</u>
January	182	34	216
February	194	32	226
March	216	40	256
April	149	41	190
May	163	51	214
June	159	42	201
July	176	48	224
August	182	40	222
September	185	63	248
October	177	53	230
November	155	65	220
December	<u>118</u>	<u>52</u>	<u>170</u>
Total	2056	561	2617

	<u>Company Visits</u>	<u>Outside Visits</u>	<u>Total Visits</u>
January	276	38	314
February	281	38	319
March	304	41	345
April	316	81	397
May	354	28	382
June	372	81	453
July	386	92	478
August	392	90	482
September	496	140	636
October	523	99	622
November	475	160	635
December	<u>255</u>	<u>143</u>	<u>398</u>
Total	4430	1031	5461

J. HOSPITALS AND MEDICAL SERVICE (Continued)

WELFARE DEPT. ANNUAL REPORT YEAR 1944

	<u>JAN.</u>	<u>FEB.</u>	<u>MAR.</u>	<u>APR.</u>	<u>MAY</u>	<u>JUNE</u>	<u>JULY</u>	<u>AUG.</u>	<u>SEPT.</u>	<u>OCT.</u>	<u>NOV.</u>	<u>DEC.</u>	<u>TOTAL</u>
Patients Admitted	118	103	116	120	110	112	151	146	108	99	109	77	1369
Patients Discharged	118	97	112	131	95	121	153	141	113	106	95	92	1374
Number of Men	28	14	22	22	22	14	10	18	18	20	17	22	227
Number of Women	57	55	60	54	57	59	81	64	54	52	63	32	688
Number of Children	1	3	3	9	1	10	21	24	2		1		75
Newborn	32	31	31	35	30	29	39	40	34	27	28	23	379
Classified as:													
Newborn	32	31	31	35	30	29	39	40	34	27	28	23	379
Obstetrical	34	34	38	37	30	29	43	42	34	32	35	24	412
Medical	36	21	17	21	18	19	29	28	22	17	24	12	264
Surgical	16	17	30	27	32	35	40	36	18	23	22	18	314
Daily Average	47.15	43.16	47.29	48.8	40.2	43.7	42.7	44.3	43.7	35.8	41.26	36.42	43.74
Newborn Days	271	199	210	259	256	286	300	330	249	286	225	203	3074
Patient Days	1201	1064	1276	1189	986	1011	1009	1037	1063	1111	1013	927	12887
Total Days	1472	1263	1486	1448	1242	1297	1309	1367	1312	1397	1238	1230	15961
Operations:													
Emergency Room	26	19	36	27	26	32	40	33	36	24	22	23	344
Major	5	9	8	8	10	12	6	9	8	9	8	8	100
Minor	8	8	7	15	14	16	29	23	37	16	14	5	192

Note: 70 deaths included in discharges

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

EXTRA AND ORDINARY EXPENSES

1944

January

Purchase of Dictaphone for Industrial Hygiene Department	\$350.00
Purchase of Surgical Instruments	197.09

April

Wool Blankets	130.00
Extra Purchases of Drugs and Vitamin (Reason: anticipation and quantity prices)	373.97

July

Triple Wall Oven for Laboratory	200.00
Linens	348.20

August

Repairs to Vacuum Cleaner System	298.00
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October

Linens, Bedding, etc.	133.38
Surgical Instruments	205.01

November

Linens, Bedding, etc.	139.46
Surgical Instruments	173.49

December

Surgical Instruments	108.71
Linens	65.86
Installing Copper Pipe	248.21

23.

j. HOSPITALS AND MEDICAL SERVICE (Continued)NEGAUNEE DISPENSARY

The Negaunee Dispensary, which was formerly the Negaunee Hospital, continues to serve as the medical center for our employees in the Negaunee District. It is the headquarters for Dr. Mudge who serves our people in this district and also for the nurses who assist him in the Negaunee Dispensary and during his office hours. Miss Ina Atkin, our visiting nurse in the Negaunee District, also has her office in the Negaunee Dispensary. There are approximately 1300 employees in the Negaunee District and most of them have their medical needs served through the Negaunee Dispensary. Some of our Negaunee employees receive medical service from our doctors at the Ishpeming Hospital. Regular visits are made to the Negaunee Dispensary two or three times each week. Conferences are held regularly with Dr. Mudge and with the nurses.

Dr. R. A. Burke continues to serve the medical needs of the Cambria-Jackson employees. By agreement he receives the \$1.50 per month which these employees pay for medical service and he also receives \$1.00 per month per employee for his hospital, known as the Twin City Hospital. However, several Cambria-Jackson employees go to the Negaunee Dispensary for medical service.

The Negaunee Dispensary, in addition to being the medical center for our people in Negaunee, also serves as an emergency hospital or clinic for injuries which do not need to be brought to the Ishpeming Hospital. No hospital cases are taken care of in the Negaunee Dispensary but many slight injuries are taken care of there.

GWINN DISTRICT

Throughout most of 1944 we did not have a doctor in Gwinn. However, we have now assigned Dr. H. J. Treshler to the Gwinn District. He is making his home in the home formerly occupied by the doctor at Gwinn. His office is in the same building. Dr. Treshler came to Negaunee in June of 1944 and we transferred him to Gwinn a month ago. Mrs. Margaret Kemp, R.N. has acted as a visiting nurse in the Gwinn District for the past year and a half. We have dispensed with her services now since Dr. Treshler has been assigned as the full-time doctor in the Gwinn area.

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

REPUBLIC HOSPITAL

Each year we include a report on the building which was formerly known as the Republic Hospital. This building is now under the supervision of the Republic Township Board. Dr. Van Riper of Champion, who cares for our medical needs in the area, uses the Republic Hospital as an office and a sort of a health center. He makes daily trips to Republic and holds office hours in the old Republic Hospital. This is a great convenience to the people of Republic and the surrounding area.

We have had a request from the Township Board, through the Supervisor, Mr. Joseph Labold, to sell the old hospital building to the Township Board. The old Republic Improvement Association, which was formed some years ago, did not function very long. Presently the Republic Township Board and the Republic Township School District are cooperating in an effort to keep the building open so that there may be some type of medical and health center in the township. It has been recommended that the building be transferred to the Republic Township Board.

The Republic Township Board continues to engage a registered nurse, who is a married person, and part of her remuneration is an apartment in the hospital building. This nurse is on duty to assist Dr. Van Riper and to give attention to emergency cases. The arrangement is an excellent one as far as the medical and health interests of the township are concerned.

IRON RIVER HOSPITAL

During the year 1944 four visits were made to the General Hospital of the Iron River District at Stambaugh. We have a monthly report from the Iron River Hospital and we have occasionally attended the board meetings. This hospital takes care of the medical and hospital needs of our employees at the Spies-Virgil Mine at Iron River. The annual meeting this year was attended by Walter F. Gries, Superintendent of the Welfare Department.

Dr. L. E. Irvine continues to provide medical attention for our Spies-Virgil employees. Dr. E. D. Addison at Crystal Falls, by arrangement, cares for a small group of our employees who live in Crystal Falls.

PAYMENTS TO PHYSICIANS

For reference purposes the following statement is made in each annual report:

On August 1, 1927, a new rate of payment for the Cleveland-Cliffs Iron Company went into effect. The employees pay \$1.25 for medical services for themselves and the dependent members of their families and the Company pays 50¢ per man per month to cover medical and hospital services for cases coming under the Compensation Act.

23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

PAYMENTS TO PHYSICIANS (Continued)

We wish to note in this annual report that the rates described in the preceding paragraph have now been changed. These new rates became effective January 1, 1944. The monthly rate was raised from \$1.25 to \$1.50. Employees, therefore, are now paying \$1.50 per month for medical attention for themselves and the dependent members of their families. The Company has increased its contribution from 50¢ per man per month to 75¢ per man per month to cover medical and hospital services for cases involving injuries and accidents.

PHYSICAL EXAMINATION OF EMPLOYEES

The contract which we have had with the Trudeau Foundation of Saranac, New York was continued throughout 1944 with the usual satisfactory results. This contract runs from November 1st to October 31st. The Employment Department makes regular schedules for physical examinations of employees for each working day and the policy has been to schedule at least twelve men for each working day. Copies of this schedule are filed with the Welfare Department and the results of the physical examinations are also reported to the Welfare Department.

Mr. Sidney Hodson continues in the position of technician in connection with our Industrial Hygiene Department, being assigned by the Trudeau Foundation. Mr. Hodson, during emergencies, has assisted us in the hospital in our x-ray work.

INDUSTRIAL HYGIENE DEPARTMENT

Our Industrial Hygiene Department began its services on April 1, 1939. Dr. Waldie continues to direct the department. We feel that Dr. Waldie does a very fine type of work. During the past year the work of the Industrial Hygiene Department probably has been more important than at any time because of the fact that many new applicants who are now being examined do not approach the same physical fitness level as was formerly the case. In other words, we are also "scraping the bottom of the barrel". Dr. Waldie has gained information over the past several years regarding our people which makes it possible for him to have a rather intimate knowledge of the many cases which come to his attention and which require special consideration.

Special attention is given to many cases which require follow-up work. Dr. Waldie generally refers these cases to the regular family physician and a check-up is made from time to time to determine whether or not progress is being made. In some cases Dr. Waldie recommends that employees seek the services of specialists. Many of our people have gone to the Mayo Clinic at Rochester for special attention.

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23. j. HOSPITALS AND MEDICAL SERVICE (Continued)

The physical examinations are arranged so that as little time as possible is lost from the individual's regular job. There has been some objection on the part of our employees to this program since there has been agitation to have physical examinations conducted on company time. We have a few cases where men are on day shift all the time, and, of course, it is necessary to examine them and to give them some allowance of time as far as their work is concerned.

The following number of examinations have been conducted through December 31, 1944:

Cleveland-Cliffs Iron Company	17,368
Calumet & Hecla Company	29
Inland Steel Company	2,971
Republic Steel Corporation	1,653
Pickands Mather Company	149
M. A. Hanna Company	197
North Range Mining Company	1,237
Oliver Iron Mining Company	687
Marquette County Road Commission	10
Hercules Powder Company	<u>143</u>
Total	<u>24,444</u>

This district has felt the manpower shortage. Presently, 250 to 300 more miners and underground laborers could be employed. We have reduced our physical requirements somewhat so as to take advantage of such manpower as is available in the area. In special cases a conference is had with the Employment Office and with Dr. Waldie. We have also referred some of our special cases to Mr. C. J. Stakel, Manager, for final decision with regard to employment.

It is our desire to point out again that the creation and establishment of the Industrial Hygiene Department was a very important step. We do hear some complaints on the part of employees regarding this department, which we believe is natural because we are dealing in many cases with some very personal problems. However, it appears that most of our employees recognize that this is a special service to them and they seem pleased with it. Any employee is privileged to discuss with Dr. Waldie anything regarding his health and physical fitness. We have insisted that all problems involving physical fitness and medical attention be handled through the Industrial Hygiene Department and our medical staff. We have not given the employee, following physical examination, any kind of a written report. We have, however, if some defect or deficiency is found, asked the employee to report for conference and for treatment. In cases of this nature there is a regular follow-up program.

23.

k. COMMUNITY HEALTH

The general health conditions in Marquette County during the past year have been very good. There have been no epidemics, nor has there been any great loss of time in industry because of prolonged illnesses of any kind. The winter of 1944-45 started out with some rather severe cold weather, but hospital statistics do not indicate any great increase in enrollment. The common cold still seems to be the greatest reason for loss of time. We did have some evidence of increase in absenteeism during the summer months. As far as we have been able to determine, however, this was not due to illness but in some degree to the fact that men are earning higher wages and sometimes the after-payday vacations are extended.

Each city in the County of Marquette has a health officer and a full-time school nurse. The county also employs a full-time nurse who spends much of her time in the township districts. This nurse works in cooperation with the Red Cross and is supervised by the county school commissioner.

The city health officers in Marquette County are:

Ishpeming	-	Dr. W. A. Corcoran
Marquette	-	Dr. C. P. Drury
Negaunee	-	Dr. N. J. Robbins

The Michigan Children's Fund, which is financed by funds provided by the late Senator James Couzens, carried on its usual dental clinic during the summer months and many children, particularly those in rural areas, were given dental attention.

The Bay Cliff Health Camp was in session for the tenth year during the past summer. About 170 children were enrolled from the counties of the Northern Peninsula of Michigan. These children are privileged to attend camp for six or seven weeks at Bay Cliff Health Camp, which is near Big Bay in Marquette County. I have continued to serve as Chairman of the Board of Directors of Bay Cliff Health Camp during the past year. Mr. Moulton formerly served in this capacity. We take care of a number of different types of children, including undernourished, poliomyelitis convalescent cases, cardiac cases, and diabetic children. Within the past few years we have also added a department to assist children with speech and hearing defects. The results of this program have been very gratifying.

23.
1. RED CROSS (Continued)

Report of Nurse
Marquette County Chapter
American Red Cross.

Home Calls:	
Children needing eye examinations	25
Children with frequent sore throats	10
Children with defective hearing	12
Children with defective speech	8
Feeble-minded children	2
Crippled children	10
Rheumatic Heart	30
Other Calls;	
School calls	109
Scarlet Fever	6
Chicken Pox	8
Measles	7
Other contagious diseases	7
School home calls	110
School Board members and lay helpers	15
County Supervisors	4
Social Welfare Office	24
Infant	76
Pre-School	50
Adult	40
Pre-Natal	17
Post-Natal	13
to hospitals	13
to Northern Michigan Children's Clinic	25
Physicians	12
Red Cross	3
Nurses	7
Emergency call with physician	1
Teacher consultations	138
Inspection of school children for skin diseases and pediculosis	509
Glasses issued to children thro	
Children's Fund	12
Children examined at Cardiac Clinic	14
Children examined at Children's Center	3
Children examined at Northern Michigan Children's Clinic	56
Children admitted to N. M. C. Clinic	3
Chest X-rays for children	2
Children admitted to Children's Unit, State Hospital, Newberry	1
One home inspected in Escanaba with regard to children returning there.	

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23.
1. RED CROSS (Continued)

Report of Nurse (Continued)

Hearing and Speech:

Children given hearing test with group audiometer	406
Children given individual hearing test by Mr. Courtney Osborne, State Dept. of Special Education	98
Children tested for speech defects by Mr. Osborne	12

Bay Cliff Health Camp:

Rheumatic Heart cases	9
Defective hearing	4
Speech defects	3
Undernourished	5

Children completely immunized:

Smallpox	150
Diphtheria	161

Assisted in giving physical examinations to 4-H Club boys and girls at Camp Shaw.

Assisted Dr. N. H. Robbins and Mrs. Sidney Williams, R.N. with a vaccination and toxoid clinic at Negaunee Central School.

Assisted Mrs. Ellen Levine in conveying 8 children to U. of Michigan Hospital, Ann Arbor.

Conveyed 3 children, 3 women, and 7 men to U. of M. Hospital; returned 2 women and 2 men.

Conveyed 14 children to Bay Cliff Health Camp.

Made one tour in County with Youth Guidance Committee.

Talked to Dr. Burrow's Nurses Sociology Class.

Interviews:

Nursing Consultant from Michigan Crippled Children's Commission.
U. P. Public Health Nurses.
Consultant from State Department of Health.

Meetings;

Counsel on Community Nursing	4
Bay Cliff Health Camp	1
U. P. Public Health Conference at Houghton	1
Teachers(Institute at Negaunee	1

Attended In-Service training courses for Public Health Nurses at School of Public Health in Ann Arbor Sept. 25 - 29.

Lectures:

Dr. Alex Campbell on Maternal Health at N.M. C. Clinic.
Mr. Courtney Osborne on hearing and speech defects at College.

Time spent in office 272 hours. Mileage 20,226.

Emma C. Anderson,

County Health Nurse.

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23.

m. RELIEF WORK

The usual program of extending assistance to certain of our families was carried on during 1944. During 1944 26 families were assisted, compared with 24 families in 1943.

The following is a statement of the assistance rendered:

	<u>Ishpeming</u>	<u>Negaunee</u>	<u>Republic</u>	<u>Gwinn</u>	<u>Marquette</u>	<u>Total</u>
January	\$ 124.51	67.73	23.45	45.75	----	261.44
February	172.96	11.45	23.45	75.75	20.60	304.21
March	145.24	57.73	23.45	60.75	10.30	297.47
April	122.66	15.05	23.45	60.75	----	221.91
May	119.40	63.72	23.45	35.00	20.60	262.17
June	100.29	33.16	30.10	25.75	10.30	199.60
July	103.42	59.18	8.00	66.50	10.30	247.40
August	113.56	121.45	8.00	65.75	10.30	319.06
September	136.56	36.40	54.35	25.75	10.00	263.06
October	73.80	47.73	8.00	80.75	----	210.28
November	144.81	69.99	77.52	60.75	20.60	373.67
December	<u>165.03</u>	<u>46.45</u>	<u>53.46</u>	<u>117.86</u>	<u>10.30</u>	<u>393.10</u>
	\$1522.24	630.04	356.68	721.11	123.30	3353.37
Number of families assisted	12	8	2	3	1	26
Average amount of relief per family						\$ 128.98

n. EMPLOYMENT

This department keeps in daily touch with the Employment Office, in charge of Mr. H. W. Sundberg. Occasionally, special cases which involve individuals about whose employment there is some question have to be discussed with the Welfare Department. We make every effort to coordinate our activities so that in special cases the records of both offices are used to come to a final determination.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23.

o. INCAPACITATED EMPLOYEES.

During the year payments have continued to certain men and certain families who originally did not have sufficient service to bring them within the provisions of the pension system. Donations were granted to those people. Some of those men had suffered some disability through accident, or thro injuries at the mines, and there are some with large families who have become incapacitated.

Following is the list of families and the amount of the donations paid to them during the year:

	Monthly Rate For 1944	Total Amount Paid During 1944	
Fred Fredette	20.00	180.00	Died Sept. 26, 1944.
Sam Metherell	14.40	172.80	
John Aho	14.40	172.80	
Andrew Niemi	16.60	199.20	
Edmund Durante	20.00	240.00	
Edward Van Langenhoven	20.00	240.00	
Donato Valenzio	20.00	240.00	
Fred Carlson	16.00	192.00	
Joseph Thomas	75.00	900.00	
William Ryan	25.00	300.00	
R. J. Chenneour	55.00	660.00	
W. H. Moulton	150.00	150.00	Died Jan. 30, 1944
John Maki	25.00	125.00	Died July 2, 1944
Charles Vincent	30.00	360.00	
Hilmer Lerlie	25.00	300.00	
John Iskola	30.00	360.00	
John Eskel Carlson	30.00	360.00	
Mark Dixon	40.00	480.00	
Gust Oja	27.50	330.00	
William Saari	25.00	275.00	Began Feb. 1, 1944.
Albin Romo	30.00	300.00	" Mar. 1, 1944
Louis Oien	50.00	200.00	" May 1, 1944
			Ret. to work in Sept. 1944.
Matthew B. Richards	25.00	100.00	Began July 1, 1944
			Trans. Retirement Roll in November 1944.
Simon Luoma	30.00	150.00	Began Aug. 1, 1944.
Michael Denofre	30.00	90.00	Began Oct. 1, 1944.
Matt Syrja	30.00	60.00	Began Nov. 1, 1944.
		<u>60.00</u>	
		\$ 7136.80	

HOLMES MINE DONATIONS.

Peter Lesage	20.00	240.00
Carl Jarvinen	16.99	203.88
Bernt Wiggen	20.00	240.00
Martin Trondson	20.00	240.00
		<u>240.00</u>
		\$ 923.88

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23

o. INCAPACITATED EMPLOYEES (Continued)

Donations to Widows.

	<u>Monthly Rate</u>	<u>Total Amount Paid</u>
	<u>For 1944</u>	<u>during 1944</u>
Mrs. J.H. Tregoning	25.00	300.00
Mrs. Fiina Kampinen	25.00	300.00
		<u>\$600.00</u>

FURNACE DEPARTMENT DONATIONS.

These donations, after being granted, were paid by the Furnace Department itself, and later on by the Cliffs Dow Chemical Company. By directions from Cleveland on September 1, 1937, the donations have been paid from this office and the following payments have been made during the year:

John Schrandt	25.00	300.00
Mrs. George Cameron	20.00	240.00
Jacob Hill	20.00	240.00
Julius Olson	25.00	300.00
		<u>\$ 1080.00</u>

Amount of Donations paid to incapacitated employees	\$ 7136.80
Amount of Donations paid to Incapacitated Holmes Mine Employees	923.88
Amount of Donations paid to Widows	600.00
Amount of Donations paid to Furnace Department cases	<u>1080.00</u>
	\$ 9740.68

WELFARE DEPT. ANNUAL REPORT YEAR 1944

23. INCAPACITATED EMPLOYEES (Continued)

Retirement Roll.

Twenty-five new names were added to the Retirement Roll during 1944. Each case is carefully studied with the Superintendent of the mine and is finally referred to the Manager, and if the case is approved the name is added to the Retirement Roll. It has been the Company policy to give consideration to old and faithful employees. Conferences are held with the employees from time to time and they are always encouraged to come in with their problems.

We find, in many of these cases, the Social Security benefits are still quite low. The Company supplements the Social Security benefits and also permits the employee to carry a portion of his group insurance. This privilege of carrying group insurance on the part of the older and retired employees means a good deal. Practically every individual who accepted retirement has also continued to carry the life insurance feature of his group insurance. This privilege is very highly appreciated.

Following is the list of men on the Retirement Roll during 1944, showing the monthly rate and the total amount paid.

	<u>Present Monthly Rate</u>	<u>Amount Paid During 1944</u>
John Mattson	21.32	255.84
Mrs. Anna Simo	40.00	480.00
John Chiri	31.00	372.00
James Christian	39.00	468.00
Matt Hemmila	27.00	324.00
Esten Peterson	33.50	67.00
William J. Phillips	49.50	594.00
Swen Lahti	12.31	147.72
Sam Roberts, Sr.	33.00	396.00
Sam Sims	39.00	468.00
Charles Abramson	46.50	558.00
Thomas Berryman	35.00	420.00
Charles Larson	32.00	384.00
Albin Lyman	47.50	570.00
John H. Maki	39.00	468.00
Lars Olson	36.20	434.40
Hemming Silas	35.00	420.00
Dave Spencer	32.00	384.00
Joseph Villeneuve	31.00	372.00
Henry Beale	50.00	600.00
John Hennessey	35.00	420.00
Erick Soyrinki	13.81	165.72
William T. Waters	20.00	240.00
Fred L. Prudom	50.00	600.00
Charles Stevens	40.00	480.00
Matt Mattson	10.00	120.00
Henry Hendrickson	10.00	120.00
William Kennaugh	10.00	120.00

Died 2/17/44.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23. O. INCAPACITATED EMPLOYEES (Continued)

Retirement Roll. (Continued)

Anton Seagren	10.00	120.00	
John Bjorne, Sr.	10.00	120.00	
John Bergeson	10.00	120.00	
Herman Johnson	10.00	120.00	
John Johnson	10.00	120.00	
Rasmus Christensen	10.00	120.00	
August Wigg	10.00	120.00	
Otto Lindstrom	10.00	120.00	
John Chirio	10.00	120.00	
Simon Maki	10.00	120.00	
Abram Lahtinen	10.00	120.00	
Frank Martin	10.00	120.00	
Gust Palomaki	10.00	120.00	
C. A. Steede	10.00	120.00	
John Walima, Sr.	10.00	120.00	
Herman Aho	10.00	120.00	
Alex Boz	10.00	120.00	
Peter E. Nelson	10.00	120.00	Died 12/18/44.
John Cox	10.00	120.00	
Joseph Grevious	10.00	120.00	
Gust Holmgren	10.00	120.00	
Chris Stone	10.00	120.00	
Otto Franson	10.00	120.00	
Michael McNamara	10.00	120.00	
Otto Schadt	10.00	120.00	
Arsene Tousignant	10.00	120.00	
Edwin Harper	10.00	120.00	
William F. Worth	10.00	120.00	
Peter Coron	10.00	120.00	
George Young	10.00	120.00	
Thomas Atwell	10.00	120.00	
Joseph Bollero, Sr.,	10.00	120.00	
Swan Anderson	10.00	120.00	
Henry Hyvonen	10.00	120.00	
Henry Knudsen	10.00	120.00	
Anthony Lavelle	10.00	120.00	
Noah Morin	10.00	120.00	
Godfrey Larson	10.00	120.00	
Antti Pasonen	10.00	120.00	
Helmer Solem	10.00	120.00	
Frank Velin	10.00	120.00	
Herman Alanko	10.00	120.00	
Thomas Graham	10.00	120.00	
Charles Roseveare	10.00	120.00	
Thomas Welsh	10.00	120.00	
Emanuel Stepgens	10.00	120.00	
Henry Heiser	10.00	120.00	
Joseph Menzer	10.00	100.00	Died 11/15/44.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23.

o. INCAPACITATED EMPLOYEES (Continued)Retirement Roll (Continued)

William J. Pascoe	10.00	120.00	
Fred Holm	10.00	120.00	
John Karhi	10.00	120.00	
Joseph Yopic	10.00	120.00	
Victor Lindberg	10.00	120.00	
Andy Nelson	10.00	120.00	
William J. Hill	10.00	120.00	
John Freethy	25.00	300.00	
Richard C. Carlyon	10.00	120.00	
William Pearce	10.00	120.00	
Samuel Roberts	10.00	120.00	
Jonas Koskela	10.00	120.00	
A. H. Tillson	10.00	120.00	
Querino Piziali	10.00	120.00	
Charles Pascoe	10.00	120.00	
John P. Treloar	10.00	120.00	
Emil Larson	10.00	120.00	Began 1/1/44.
Jacob Nikko	10.00	120.00	"
William Denney	25.00	300.00	"
Gust Vinge	10.00	100.00	3/1/44
Thomas Hemming	10.00	100.00	"
Henry Racette	10.00	90.00	4/1/44
Edward Carlyon	10.00	90.00	"
Antonio Filippi	10.00	90.00	"
Elin Hedinemi	10.00	80.00	5/1/44
Sam Stephens	10.00	80.00	"
John Cleven	10.00	70.00	6/1/44
John H. Kermode	10.00	70.00	"
James Blee	10.00	70.00	"
Edward Peterson	10.00	50.00	8/1/44
Konsta Saastamoinen	10.00	50.00	"
William H. White	10.00	50.00	"
William T. Ninnis	10.00	40.00	9/ 1/44
John T. Wills	10.00	40.00	"
Frank Arrieri	10.00	30.00	10/1/44
John Huhtala	10.00	30.00	"
Carl J. Larson	10.00	30.00	"
Philip T. Rowe	10.00	30.00	"
Carl F. Swanson	10.00	30.00	"
Mathew B. Richards	10.00	20.00	11/1/44
Charles Hakkarainen	10.00	10.00	12/1/44

\$ 20078.68

In the month of October 1944 and again in December, a visit was made to the Mesaba Range to go over the cases of several old employees and to determine whether or not they should be retired. Individual interviews were held in each case and quite a few men will be retired, beginning in January 1945.

welfare department.

23.

p. COST OF LIVING

We have endeavored to make a brief study of living costs as they came to our attention during 1944. We occasionally check prices locally and comparisons are made with other parts of the state and with charts which are provided by the Federal Department of Agriculture and the State Department of Social Welfare. Using an index number of 100 as a basis of costs in 1939, we estimate that on that basis living costs have advanced as follows: Food (on the basis of index number 100), 158; shelter, 120; clothing, 134; fuel, 135; light, 100; home furnishings, 148. It is generally estimated that the cost of living during the last year, on an average, has increased about 11%.

We make inquiry occasionally among local merchants regarding general business conditions. As pointed out last year, two of the old established mercantile businesses in the City of Ishpeming have gone out of business. They are the Koski Store Company and the A. W. Meyers Mercantile Company. Previous to that there were others, but the two mentioned were large and old established businesses. It is also interesting to note that the chain stores have taken over the best business areas in the town. They are the A & P Food Store, the National Food Store, the J. J. Newberry Company, and the J. C. Penney Store. In Negaunee, a Cashway Store, as well as an A & P Store, have been in business on the main street. We also have a Cashway Store at Gwinn.

Merchants, including the chain store merchants, report that general business conditions in the district are good. They also report that because of larger earning power, people have acquired some new tastes. Merchants continue to tell me that people are looking for better qualities of goods even though they know the prices are higher.

Within recent months a new furniture store, a branch of the Tonella & Rupp Store in Marquette, has been opened in Ishpeming. Evidently our employees are purchasing good grades of food and considerable money is going into home furnishings as well as home remodeling.

A recent report published in the current issue of the Miners' Bulletin indicates that since Pearl Harbor our employees have purchased well over a million dollars worth of war bonds. It is also very noticeable in this district that the general liquor business is a very thriving one.

Housing

There is very little change in the housing situation in Ishpeming and Negaunee. Good, average homes are still scarce and during the past year there has been very little building. Presently, it is very difficult, both in Ishpeming and Negaunee, to secure living quarters of any kind.

23.

p. COST OF LIVING (Continued)Relief Situation

During the past year Marquette County has had a very low public relief case load. The average for the year will be less than 100 cases per month. This low case load, of course, is due to the fact that more people are employed than have been employed regularly for a great many years. People now receiving public relief are either not employable at all or employable only during the summer months. The average age is above 60 years, which indicates that most of these people are too old for any regular type of employment.

The number of aged persons in Marquette County receiving Old Age Assistance from the State Social Welfare Commission at the end of the year amounted to 746, compared with 718 at the end of 1943. The average Old Age Assistance grant during 1944 amounted to \$27.02 which compares with \$26.38 for the previous year. The number of cases of Aid to Dependent Children, formerly referred to as Mothers' Pensions, was 111 at the end of 1944, compared with 124 at the end of 1943. The average Aid to Dependent Children grant for 1944 amounted to \$53.93 in Marquette County, compared with \$50.18 for the previous year. Sixteen blind persons were given aid through the State Social Welfare Commission during the year 1944, compared with eleven the previous year. The average grant to the blind during 1944 amounted to \$29.15, compared with \$28.95 for the previous year.

From all appearances and accounts general conditions in the whole community are above the average. I believe that the great majority of the employees of the Cleveland-Cliffs Iron Company appreciate the fact that working conditions, as well as living conditions are above the average. There appears to have been some increase in absenteeism during the year but it also appears that most of the employees of the Company are eager to work regularly and to take advantage of the high wages which are now being paid.

During the year visits are made to various meetings and contact is kept with various groups, as well as with the schools. We see no evidence at all of under-nourishment and very little evidence of lack of proper clothing. During the past year less than a half dozen cases of our own employees have come to our attention because of lack of proper food or clothing. In a few cases we have made arrangements with local schools or other sources for some guidance to be given to families where there is lack of proper home management. In some of the schools milk is provided at a small price and in certain cases where children are not able to purchase the milk, it is provided by the Boards of Education. Some schools also have provided vitamins in capsule form free of charge.

Many of the people who contact this department for various reasons throughout the year often express themselves since they are impressed by the clean appearance of the towns and by the friendly atmosphere which for the most part seems to surround the industry. We have, of course, during the past few years, definitely felt the influence of organized labor and this influence without doubt has had some effect upon the thinking and the actions of individual employees. For the most part, however, grievances are given attention without great delay and our labor relations are very good.

23.

q. IMPROVEMENT WORK

Mr. Julien Payen has continued throughout the year to be in charge of the improvement work and the care of all grounds and properties in the district. All of our buildings and grounds surrounding our properties, including the mines, the hospital, the offices, and the shops, present a very neat and tidy appearance. Without doubt this has a good influence upon the general morale of the community.

r. WELL KEPT PREMISES

During the year 1944 we continued our Best Kept Premises and Vegetable Gardens contest. This contest was established by Mr. Mather many years ago and it has continued without much interruption throughout the years. During 1944 we had over 150 entries in the contest. Visits to the various homes of our employees who entered the contest were made during August and in this work we were assisted in the judging by Mr. Julien Payen, who usually acts as Chairman, by Mr. Walter Johnson of our Compensation Department, and by Mrs. E. E. Bjork of Gwinn. Cash prizes were distributed following the announcement of the winners.

A special effort was made to induce people to plant Victory Gardens and throughout the district we saw very many excellent gardens and well kept homes. The best gardens continue to appear in the Gwinn District, although the other parts of the district also have many fine gardens and well kept premises. This contest will be carried on again during 1945.

s. COMMUNITY SERVICE WORK

The American Legion building in Ishpeming, formerly the old hospital, continues to serve as the center for all Legion activities and for various other community activities. The American Legion rents this building, maintains it, and does the repairing. Last year it was estimated that extensive repairs would have to be made if the building is to be continued in use.

The American Legion Club in Negaunee has been continued as usual and it appears that there is more activity in the building than there has been in recent years. The building is kept in good condition.

We have already pointed out the situation with respect to the Ishpeming Y.M.C.A. In this connection we should also mention the recreation area which has been started by the City of Ishpeming some years ago, but it has had very little development in recent years.

A number of fraternal organizations in the district, such as the Elks, the Eagles, the Knights of Pythias, the Knights of Columbus, the Sons of St. George, maintain their own clubrooms. Because of the number of organizations maintaining clubrooms, the social life, as far as the contribution made by the fraternal organizations in the two cities, is amply provided for.

23.

t. SATURDAY NOON LUNCHEON CLUB

Our Saturday Noon Luncheon Club, made up of superintendents and heads of departments, approximately twenty-two in number, has had a few meetings in 1944. It has been difficult to have these meetings as regularly as formerly due to rationing and to the fact that the Mather Inn is short of help. Mr. Stakel has called these meetings only when some particular problem had to be discussed with the entire group.

u. OUTDOOR ACTIVITIES

The winter started in early for the season 1944-45. We had more snow than we normally have and considerably more cold weather. However, the usual winter activities were carried on, particularly along the winter sport line, such as skiing, skating, and other outdoor winter activities. The Ishpeming Winter Sports Club has a center for sport enthusiasts of the district and during the winter special programs were held at various times on the ski hills and trails in connection with the Winter Sports Club. The abundance of snow this winter made winter sports particularly popular.

The annual ski tournament was held on February 25th with fifty entries and a larger attendance than we have had for a few years. The annual ski tournament has been an attraction in this district for over fifty years and in spite of war conditions, the tournament this year seemed to be exceptionally successful.

About five years ago the City Council of the City of Ishpeming selected a recreation commission. This commission has continued its work in connection with the study of recreation problems in the community. Several reports have been made and the commission is endeavoring to outline a program and a plan which will look forward to the recreational needs of the community over a period of years. It is hoped that some sort of plan may be finally arrived at which will combine the recreation area somehow with the re-opening of the Y.M.C.A. building.

The Mather Inn

The Mather Inn has continued to be the most popular hotel in the Northern Peninsula of Michigan. The 1944 patronage was satisfactory and in spite of the problems connected with rationing, the hotel has continued to serve the public in a very efficient manner. Many of the meetings of community nature, as well as meetings of larger groups outside of the community, use the facilities of the Mather Inn for conferences.

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23.

w. VARIOUS DEPARTMENTS.

LAND DEPARTMENT

COMPARATIVE STATEMENT OF GENERAL WELFARE EXPENSES

FOR YEARS 1941 - 1944 INCLUSIVE.

<u>General Welfare Account No. 11</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>
A-2 Prop. charged by Treas.	\$ 300.00	300.00	300.00	300.00
11-F Miscellaneous Expenses	230.00	150.00	240.00	240.00
	<u>530.00</u>	<u>450.00</u>	<u>540.00</u>	<u>540.00</u>
 <u>Donations.</u>				
Munising Fire Department	10.00			
U.P. Development Bureau	500.00	500.00	500.00	500.00
Mather High School- Munising			20.00	.
American Red Cross			550.00	825.00
Construction of Honor Roll Monument- city of Munising				13.22
	<u>510.00</u>	<u>500.00</u>	<u>1070.00</u>	<u>1338.22</u>
 <u>Compensation.</u>				
Monthly payments to doctors	465.52	421.35	407.77	328.13
 <u>Compensation - Logging Operations.</u>				
Medical & Hospital	16.50	17.02	91.50	176.56
Compensation Payments	5680.12	3836.56	4800.55	3480.29
Percentage of payroll	5.5	3.3	4.7	3.5%

WELFARE DEPT. ANNUAL REPORT YEAR 1944.

23.
w. VARIOUS DEPARTMENTS (Continued)

LAKE SUPERIOR & ISHPEMING RAILROAD COMPANY
COMPARATIVE STATEMENT OF GENERAL WELFARE EXPENSES
YEARS 1941 to 1944, INCLUSIVE.

<u>Donations</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>
Fire Department	19.90		5.00	15.00
Community Chest Bund-Mar- quette, Negaunee & Ishpeming	400.00	300.00	575.00	387.50
American Red Cross			200.00	350.00
Munising War Fund				30.00
	<u>419.90</u>	<u>300.00</u>	<u>780.00</u>	<u>1052.50</u>
Pensions	<u>2420.00</u>	<u>5255.00</u>	<u>5700.00</u>	<u>5760.00</u>
	\$ 2839.90	5555.00	6480.00	6812.50
<u>Compensation.</u>				
Compensation paid	2402.41	3590.26	2386.38	712.16
Medical expense	2240.76	931.86	1180.34	768.07
Percentage of Payrolls a/c compensation payments	.0029	.0039	.0025	.0007

23.

w. VARIOUS DEPARTMENTS AND ACTIVITIES

Each year I include in my annual report a statement of special activities of this department throughout the year. In 1944 I completed my third year as Chairman of the State Social Welfare Commission and I was also re-appointed by the Governor for a new five-year term, expiring in June, 1949. The State Social Welfare Commission is now meeting once a month and we can transact most of our business in one day's time. This is the state commission which is the governing board and the policy-making agency for all matters dealing with direct relief, Old Age Assistance, Aid to Dependent Children, Aid to the Blind, the Child Welfare services, problems of adoption and licensing of boarding homes and maternity hospitals, homes for transients, and matters dealing with waywardness and delinquency of juveniles. I have served as Chairman of this commission for three years out of the past five.

Other activities during the year areas follows: I have continued to serve as Chairman of the Board of Directors of Bay Cliff Health Camp, a summer camp for children, near Big Bay, Michigan. We receive most of our funds from the Michigan Children's Fund, which was established by Senator Couzens some years ago, and from the Michigan Crippled Children's Commission. We care for children who are under-nourished, diabetic, cardiac cases, convalescent poliomyelitis cases, and special cases in hearing and speech defects. Our enrollment last summer was 170 children. I am still serving in the capacity of Chairman of the Preparedness and Disaster Relief Committee of the American Red Cross for Marquette County. I have served as a member of the Michigan Child Guidance Institute; a director of the Marquette County branch of the Michigan Tuberculosis Association and Vice Chairman; member of the Board of Directors of the American Red Cross for the County of Marquette; as a Director of the Michigan Welfare League; and Director of the Michigan Society for Crippled Children and Disabled Adults, Inc. For the year 1944 I served as Chairman of the Health and Welfare Committee of the Office of Civilian Defense for the State of Michigan. For the past six months this committee has been inactive and there seems to be no further need for continuing the committee.

These activities naturally work in with the duties which normally fall to a welfare department.

x. POLICE DEPARTMENT

The Police Department is under the supervision of the Welfare Department and is in direct charge of Chief Robert J. Veale. Conferences are held with Mr. Veale almost daily regarding police work and plant protection. Mr. Veale submits a monthly report and gives attention to the various requests which are made from my desk from time to time.

We feel that our Police Department is a well organized unit. It has been a uniformed unit now for some time and we have tried to place emphasis and we give special attention to the selection of men as members of the Police Department. We have tried to discard the old policy of using older men in their declining years as members of the police force.

23.

y. MINERS' BULLETIN

Periodically throughout the year, this department, in conjunction with the Safety Department, issues the Miners' Bulletin. The Welfare Department always pays special attention to the articles submitted for the bulletin, particularly articles dealing with health of employees and their general welfare. It is felt that the bulletin reaches many of our employees who have no other contact outside of their regular work. During the year a centennial issue, marking the discovery of iron ore in this district one hundred years ago, was prepared with a special article on general welfare activities on the part of the company in behalf of its employees.

z. APPRECIATION

I wish to record in this report my appreciation for the cooperation and the understanding which have always been given this department by Mr. C. J. Stakel, Manager, and by Mr. C. W. Allen, Assistant Manager. I wish also to record my appreciation for the cooperation which has been received from Mr. A. J. Stromquist, Safety Director, and Captain Rogers, his assistant. The Welfare Department strives to cooperate in every possible way with the Safety Department and we believe this cooperation has had good results.

I wish to conclude my annual report with a word of appreciation for the splendid help and assistance of Mr. Walter E. Johnson, our Compensation Agent, who has served in this capacity for many years and who is familiar with all the activities of the department. I desire also to express my appreciation for the work of Mr. Johnson's assistant, Mrs. Shirley Nault. The added responsibilities which have come to this department in recent years has made it necessary for me to place additional responsibility upon Miss Mary Ryan, our office receptionist and file clerk, and Miss Emily Nicholas, my secretary. The cooperation of Miss Ryan and Miss Nicholas throughout the year has made it possible for the work to go on without interruption and for this continued cooperation we are deeply grateful.

ELECTRICAL DEPARTMENT
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ATHENS MINE

On the recommendation of the superintendent at the mine, the speed of the skip hoist is increased from time to time as the shaft repair work progresses. This adjustment for higher speed has taken place on two occasions in 1944, as follows:

Feb. 23rd from 1285 F.P.M. to 1340 F.P.M.
July 27th from 1340 F.P.M. to 1440 F.P.M.

Burning of the contact bars and brushes on the master controller of the amplidyne control on the skip hoist equipment, was the cause of some difficulty several times after its installation. The General Electric Company had agreed to take care of this matter and sent their man, Mr. Baxter, with the necessary resistors etc., to rearrange the steps between bars so as to decrease the voltage steps and thus decrease the current and arcing between segments.

Broken risers on the skip hoist generator were the cause of several shutdown periods over weekends during the year. After this difficulty, it was decided to arrange for a shutdown for more extensive repairs to the armature by sending it to the General Shops. This final shutdown was made from Sept. 29th to Oct. 2nd. During this period the generator was taken out and cleaned throughout, the armature was sent to the shops for rebanding the winding on the commutator and the commutator was turned and slotted, connections were resoldered and repaired. A new band wire was also placed over the riser connections.

CLIFFS SHAFT MINE

During the year the D.C. load has increased considerably and it is no longer possible to carry the haulage load with the 100 K.W. motor generator set. The 200 K.W. M.G. set now takes the entire load while the mine is operating. The overload tripping of the D.C. breaker has been set at 1400 amperes.

One of the Negaunee Mine LM-101-MI-6 ton locomotives was rebuilt in the General Shops and sent to the Cliffs Shaft during the year. This is one of the older locomotives with G. E. Serial No. 2200, C.C.I. No. B-3-110-040.

The starting compensators for the main 180 H.P. plunger pumps have been rebuilt while a 250 H.P. compensator was borrowed from the Cambria-Jackson Mine. This work was commenced on June 27th when one of these compensators caught fire during a lightning storm which burned the coils and contacts very badly. After completing this repair job, the Cambria-Jackson equipment was returned to that mine and is now installed with the #2 haulage M.G. set in the engine room.

Considerable difficulty was encountered with the overheating of the motor on No. 1 plunger pump. On several occasions this motor seemed to loosen its induction bars in the rotor but the fault was quite difficult to locate without taking the motor apart. This was done and the rotor bars rebolted as well as the stator laminations and wedges repaired.

The "A" Shaft 750 H.P. hoist motor has been weakened by cutting out two coils in the stator during the year. These coils are upper and lower coils in the same slots of the lamination which seems to indicate that the breakdown on the first coil punctured the insulation of the second. Coils have been ordered for this motor as a matter of precaution and preparation in case of further breaks, probably requiring a complete rewinding of the stator.

The old Westinghouse starter for the 125 H.P. crusher motor has been the cause of a few small delays and repair jobs. This starter has been taken out and replaced with a General Electric 125 H.P. starting compensator formerly used with a centrifugal pump which was stored in the Lake Mine storage building.

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CLIFFS SHAFT MINE (Cont'd.)

Reconditioning of the 125 H.P. crusher motor was also taken care of during the shutdown for repairs to the crusher during the last several days of 1944.

MAAS MINE

Several minor delays have occurred at the Maas Mine during the year due to compressor motor and exciter difficulties. The slip ring troubles have been eliminated by the use of more brushholders permitting the use of more brushes with improved spring tension and better contact surface.

Compressor stoppages have occurred twice on account of commutator insulation breakdown on the exciter armatures. This has not caused any serious delay because there has been a haulage generator available to furnish D.C. during the repair period.

The most serious delays were those caused by the burnout of coils in the stator of the #2 compressor motor. There are now seven coils cut out of this motor and 2 coils out of #1 motor. The No. 1 motor is in fair condition but No. 2 has a great number of charred coils with the probability that these coils may break down between turns. In view of the fact that we have seven motors of this type, a complete set of coils with all the necessary wedges and insulating material should be on hand to care for an emergency that will surely arise.

The rotor shaft of the 700 H.P. skip hoist motor broke in the coupling causing a shutdown of the mine on April 24th. The spare rotor bought from Westinghouse in 1938 was put in this motor and the rotor with the broken shaft was shipped to the Westinghouse shops in Milwaukee for repairs. When the repair job was completed and the rotor returned to the mine on Aug. 24th it was unloaded on the engine house floor and is still there waiting for a coupling. In view of the fact that the rotor now operating is in poor condition on account of its having several patch jobs in the winding, it is recommended that this coupling job be taken care of as soon as possible.

Haulage operations have been carried on for the past year without much difficulty, the greatest expense being repairs to U. G. locomotives.

Some repairs were made to the generators in the engine house and a complete rewind has been made on the 215 H.P. Synchronous motor on the #1 haulage M.G. set.

The 6th Level has been connected to the main haulage system with a #4/0 cable through the winze from the 5th level, in addition to the #4/0 feeder through the main shaft.

Repairs to the 400 H.P. cage hoist motor have been made, including repairs to the winding, rewedging of the coils, new bearings, turned slip rings and the build up of the shaft to fit same coupling as the spare 400 H.P. hoist motor from Lake Mine storage. This spare motor was used for the cage hoist while repairs were made to the regular motor.

Hoisting operations have stopped at the winze between the 5th and 6th level since the 6th level drift was completed to the main shaft. The #2-3 conductor 2300 volt cable, feeding this hoist equipment, is still in place and is now being used to feed the A.C. motor on the Worthington pump.

This 6th Level pump set up with float and magnetic switch for automatic control was installed in July of 1944 for 440 volt operation with 2300 volt cable through the winze from the hoist panels on the 5th level and 2300/440 volt transformers near the pump on 6th level.

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NEGAUNEE MINE

Hoisting operations at Negaunee Mine have moved along quite smoothly during 1944, the only break other than routine repairs being a break in the rotor circuit of the 350 H.P. induction motor of the old flywheel set. This was repaired on the job in about four days with no delay to regular operations.

Haulage equipment has functioned during the year with regular locomotive repairs and cable extensions. Since the 14th level has become one of the larger operating levels with six locomotives and most of the blowers and scraper machines, the best voltage obtainable must be at this part of the mine. For best results, both 400,000 C.M. shaft cables have been tied in parallel to the 13th level with one feeder from this point to the 14th level through the main shaft. Another feeder connects the 13th and 14th levels through a raise about 1200 ft. from the shaft.

The 150 K.W. Westinghouse haulage set has been repaired while the 200 H.P. M.G. set carried the full load. Most of this work was on the armature of the generator which required rebanding and rebuilding of equalizer connections and risers.

Some changes were made in the 2300 volt power circuit from the engine house to the shaft house during the summer to furnish power for the new electric shovel. The old #6 armored power cable for shaft house power and lights was replaced with a new #2/0 cable. The circuit breaker was set up for the higher current requirement and ground protection was also provided.

Regular shovel cable was not available so #4 steel armored cable was purchased from the storehouse for this purpose until the regular cable is delivered.

CAMBRIA-JACKSON MINE

Many changes have taken place and much rebuilding has been done at this mine during the year. The hoisting machinery has been the cause of several delays, mostly from breaks in the motor, grids and control panels.

The motor difficulties have arisen largely from failure in slip ring insulation, brushholder contacts and tension springs. The most serious break, however, occurred in the winding of the rotor on Dec. 28th when it was necessary to ship the entire motor to the General Shops for a four day repair job.

The grids are being rebuilt as time permits without delay to hoisting operations. The arc shields, contactors, relays and blow-out coils are also being renewed as soon as material is available.

The haulage equipment at this mine was in very poor condition when taken over in 1943.

Power was furnished for all D.C. purposes by the #1 haulage set which is a 150 K.W. generator driven by a 225 H.P., 2300 volt induction motor. The motor was in bad shape with several coils cut out of its stator winding. Poor bearings and a patched up D.C. armature were also causing plenty of trouble. This entire motor generator set was rebuilt in the General Shops and is now in good condition. In order to keep the mine operating while repairs were made, the #2 generator in the old engine house was rigged up with a 250 H.P. induction motor brought from the Princeton Mine storage. This motor was formerly used for the Stephenson Mine Prescott pump.

This #2 M.G. set was finally moved into the new engine house and the panels and starters so arranged that the mine may run from either set.

ELECTRICAL DEPARTMENT
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CAMBRIA-JACKSON MINE (Cont'd.)

Most of the hauling is now being done on the bottom level with three Goodman locomotives which have been rebuilt in our shops since the mine was taken over. The fourth locomotive from this level is now in the shops. In order to improve the D.C. voltage throughout the mine, #4/0 trolley wire has been used exclusively to replace smaller lines, also while the mine was shut down for repairs to the headframe in the month of May, a new section of 500,000 C.M. cable and inclosed disconnecting switches were installed in the headframe.

Control wiring and cables in the basement of the engine house have been changed to conduit and junction boxes for all hoisting and haulage circuits.

LLOYD MINE

The 500 H.P. skip hoist motor was overhauled and the bearings checked. A set of bearings from the Maas Mine Prescott pump motor were installed in this motor and its bearings sent to the General Shops to be repaired and used as spare for both of these motors as well as the Maas cage hoist motor.

The primary contactor panels for both skip and cage hoists have been furnished with repaired arc shields and new arc chutes.

Several coils had been cut out of the 50 H.P. water supply motor from time to time until a complete rewind job was necessary. This rewinding was done in the General Shops and the motor returned to the mine about Sept. 1st.

PRINCETON MINE

Some changes have been made during the past year to relieve the distress that was so apparent on the haulage and scraper machine circuits due to low voltage. The D.C. voltage conditions are good throughout the underground workings of this mine since the circuit breaker and bus arrangement for parallel operation of M.G. set and convertor has been completed.

A new pole line with bare copper wire equal to 4/0 size has been built from the engine house to #3 shaft. A new 4/0 concentric shaft cable has also been connected from this new line on surface to the double trolley feeders on the 6th level.

Hoisting difficulties were pretty much cleared up on the skip hoist at the #2 shaft when the rebuilt resistor consisting of 27 boxes of grids was installed. This replaces the old set up which was much too small.

SPIES VIRGIL MINE

Pumping equipment has been repaired including circuit breakers and the two 150 H.P. motors. These motors were sent to the General Shops for repairs to windings, slip rings and bearings.

Compressor difficulties have appeared several times the past few months due to the loose stator coils in the 403 H.P. synchronous motor. This has been taken care of in good shape by filling the slots and wedging the coils. The work was done at the mine with the help of some of the shop men from the General Shops.

After a commutator breakdown on the exciter for this compressor, our spare armature from the Cliffs Shaft Mine was sent to the Spies Virgil while new commutator insulation was built into this armature at the shops.

ELECTRICAL DEPARTMENT
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SPIES VIRGIL MINE (Cont'd.)

When the drifting operations on the 4th level required a larger blower it was decided to borrow a 25 H.P. blower with an A.C. motor from the Mather Mine until a new one could be bought. About 500 ft. of #4 - 3-conductor old cable at the mine and 1000 ft. of new #4 - 3-conductor cable from the General Storehouse was used for this job. The necessary transformers were taken from the Cliffs Shaft Mine pit loading operations near the Storehouse Yards.

MATHER MINE

D.C. power for the skip and cage hoists has been furnished by the 2500 H.P. skip hoist M.G. set most of the year. The maximum rope speed of both hoists has been set at about 1600 ft. per minute.

The two General Electric battery locomotives purchased during the year have been received and are now in service.

22. REPORT OF GEOLOGIST FOR THE YEAR ENDING DECEMBER 31, 1944

A. STAFF

The staff of the Geological Department for the year 1944 is shown in Table I below:-

TABLE I.

<u>Name</u>	<u>Occupation</u>	<u>Hours Lost</u>		<u>Hours Overtime</u>	<u>Net % Hours Worked</u>
		<u>Sickness</u>	<u>Absence</u>		
E. L. Derby, Jr.	Chief Geologist	-	47	68 $\frac{1}{4}$	101.0
Burton H. Boyum	Asst. Geologist	-	43 $\frac{1}{4}$	-	97.9
Maxwell H. Madsen	Asst. Geologist	(See Annual Report of Eng'g. Dept.)			
Archie Minnear	Draftsman	15 $\frac{1}{2}$	78 $\frac{1}{2}$	-	95.4
E. A. Allen	Sampler	-	43 $\frac{1}{4}$	-	97.9
George M. Olson	Sampler	-	47	-	97.3
Mrs. Belle F. Bloch	Office Assistant	-	18 $\frac{1}{4}$	-	96.8

Mr. George M. Olson joined the Geological Department on February 24, 1944 as an assistant to Mr. Allen in the core room.

Mrs. Belle F. Bloch was engaged as an office assistant on September 18, 1944.

The year was divided into the factors shown in Table II, below:-

TABLE II.

Total Working Days	280 $\frac{1}{2}$ days (2027 hours)
Sundays	53 "
Full days resulting from Saturday afternoons	26 $\frac{1}{2}$ "
Holidays	6
Total	366 days

Table III, below, shows the average number of men regularly employed, on a full time basis, on the Staff of the Geological Department during the past five years:-

TABLE III.

<u>Year</u>	<u>Average Number of Men</u>
1940	3.9
1941	4.5
1942	4.0
1943	4.2
1944	5.6

In the above table, only one-half Mr. Madsen's time has been included. The balance was taken up by the Engineering Department.

B. GENERAL CLASSIFICATION OF THE WORK OF THE DEPARTMENT

The work of the Geological Department was divided between the various mines, explorations and miscellaneous items shown in Table IV, below:-

TABLE IV.

<u>ITEMS</u>	<u>HOURS WORKED</u>	<u>PER CENT</u>
<u>MINES</u>		
Athens.....	92 $\frac{3}{4}$	1.0
Book.....	10 $\frac{1}{4}$.1
Cambria-Jackson.....	325 $\frac{3}{4}$	3.4
Canisteco.....	77	.8
Cliffs-Shaft.....	1,214 $\frac{1}{4}$	12.6
Dean.....	6 $\frac{3}{4}$.1
Hill-Trumbull.....	143	1.5
Holman-Cliffs.....	90 $\frac{1}{4}$.9
Lloyd.....	223 $\frac{1}{4}$	2.3
Maas.....	372 $\frac{1}{4}$	3.8
Mather.....	402 $\frac{3}{4}$	4.2
Morris Lease.....	139 $\frac{3}{4}$	1.5
Negaunee.....	167 $\frac{3}{4}$	1.7
Pontiac.....	38 $\frac{3}{4}$.4
Princeton.....	170 $\frac{3}{4}$	1.8
Schley.....	4 $\frac{1}{2}$	-
Spies-Virgil.....	626	6.5
Steep Rock.....	63 $\frac{1}{4}$.7
Tilden.....	55	.6
Total Mines	4,223 $\frac{3}{4}$	43.9
<u>EXPLORATIONS</u>		
Cambria-Jackson Mine.....	116 $\frac{3}{4}$	1.2
Cliffs-Shaft Mine.....	372 $\frac{1}{4}$	3.9
Lloyd Mine.....	222 $\frac{1}{4}$	2.3
Maas Mine.....	165 $\frac{1}{4}$	1.7
Mather Mine.....	164	1.7
Negaunee Mine.....	16	.2
Princeton Mine.....	83	.9
Virgil Mine.....	64 $\frac{3}{4}$.7
Section 1, 47-27 (Mather Mine Surface).....	525 $\frac{1}{4}$	5.4
Section 2, 47-27 " " "	88	.9
Section 3, 47-27.....	772 $\frac{1}{2}$	8.0
Section 5, 47-27.....	313 $\frac{3}{4}$	3.3
Section 19, 43-34 (Johnson Lease).....	337 $\frac{3}{4}$	3.5
Section 24, 43-35 (Spies Mine Surface).....	82 $\frac{1}{4}$.8
Total Explorations	3,323 $\frac{3}{4}$	34.5
<u>MISCELLANEOUS</u>		
Annual Report.....	107 $\frac{1}{4}$	1.1
Beneficiation of Iron Ores.....	292	3.0
Engineering Department.....	48 $\frac{1}{4}$.5
Geological Surveys on Company's Mineral Estate..	597	6.2
Investigating Mineral Land Offers.....	183 $\frac{3}{4}$	1.9
Investigating Outside Explorations.....	34 $\frac{1}{4}$.4
Michigan Mineral Land Company.....	21	.2
Miscellaneous Geological Expense.....	797 $\frac{3}{4}$	8.3
Total Miscellaneous	2,081 $\frac{1}{4}$	21.6
 GRAND TOTAL	 9,628 $\frac{3}{4}$	 100.0

B-1. DESCRIPTION OF WORK BY STAFF MEMBERS

Supervision of all drilling, explorations, and the geological surveys continued to be my direct charge throughout the year. Other than this, my more important activities included the following:-

In JANUARY, I made one trip to the Cleveland office and another trip to Chicago, - both in connection with further research, and the commercial development, of a process for the low temperature reduction of iron ore to metallic iron in the presence of a catalyst. Mr. George A. Smainis, a mining engineer with a small personal interest, and representing the balance of interest, in the fee of the Teal Lake Iron Mining Company (Cambria Mine) was the promoter. Messrs. S. L. Mather, Barber and I conferred with him at Cleveland and I conferred further with him in Chicago.

I attended a meeting of the Sampling Committee at the Battelle Memorial Institute at Columbus, Ohio, as a member of this Committee which is charged with selecting and providing representative samples of taconite and lean iron formation in the Lake Superior district. The staff at Battelle is engaged in research to develop the possibility of concentrating this material on a commercial scale. Returning from this trip, I conferred in our Cleveland office, with Messrs. S. L. Mather and Barber on our current drilling program on the Marquette Range and on numerous geological and metallurgical questions.

I attended the Annual meeting of the Minnesota Section of the A. I. M. E. at Duluth and went to Hibbing where I went over current explorations and other data in connection with our Mesaba Range properties.

In FEBRUARY, I made one trip to Hibbing and Minneapolis. While in Hibbing, I joined Mr. Walter Sterling in conferences with Messrs. Taylor and Belanger of the C. H. Taylor Company, and Mr. D. D. Haley, promoter, relative to the disposal of ore from the Minnewas property, to be reopened and operated by the Taylor Company. I also conferred with Mr. W. S. Moore of the Moore, Crago, Fryberger interests, as to an option for the Company to explore and lease a parcel under the South end of Longyear lake at Chisholm, - Land Offer No. 2282. I conferred in Hibbing with Messrs. Tartaron and Trotter, of the Minerals Separation North American Corporation, relative to the pilot plant they were designing for the treatment of Canisteo tailings by flotation during the coming operating season.

In Minneapolis, I attended the Fifth Annual Mining Symposium at the Center for Continuation Study at the University of Minnesota. This series of meetings was devoted mainly to the concentration of lean iron ores, - reviewing what has been done in the recent past and what it is hoped may be done in the future.

I checked over the proposed plans for reopening the Dean Mine located on the Mesaba Range as well as the revised estimates of ore reserves and future stripping at the Book Mine, Alpha, Michigan, made by Messrs. Archibald and Nicolson. The Company contracted for the product from the Book.

In MARCH, Mr. Pardee, State Mine Appraiser, conferred with me on all of our current drilling explorations and the Company reports made to the Tax Commission. Mr. Archibald and I prepared our Annual Report on the lands in which the Michigan Mineral Land Company owns the mineral rights and on which the taxes on the surface have become delinquent. This was in preparation for the Annual tax sale in May.

In APRIL, I made one trip to Minnesota, and one to Lansing. In Minnesota, Mr. Holt and I, in Hibbing, went over our report on the proposed opening and operation of the Pontiac property with Walter Sterling and the three of us visited the property just as the current structure drilling campaign was being completed. Also, in Hibbing, I reviewed the recently completed reserve ore estimates of our Mesaba Range properties and went over the final plans of the flotation pilot plant to be erected at the Canisteo mill. In Minneapolis, I conferred with the E. J. Longyear Company on several matters affecting their current drilling contracts with us.

Mr. Stakel and I joined Messrs. Barber and Geffine at Lansing for our Annual conference with Mr. Pardee, State Mine Appraiser. We had a preliminary conference the night of April 20th and our meeting with Mr. Pardee the following day. The results accomplished were quite satisfactory.

In MAY, I spent one day at the Cleveland office enroute to a Copper meeting in New York. Returning from New York, I spent a day in Bethlehem and another day in Lebanon, Pa. consulting with officials of the Bethlehem Steel Company. I spent another day at the Cleveland office enroute home. On the two occasions in Cleveland, I went over our current drilling with Messrs. Brown and S. L. Mather, and Michigan State tax matters with Mr. Geffine. I attended the public hearing in Ishpeming before the Tax Commissioners which was held on May 8th.

I made one trip to St. Paul and the Mesaba Range. In St. Paul, I attended the Occupational tax hearing on May 15th in company with Messrs. Walter Sterling, Donovan and Bubb. While on the Range, I went over the drilling and concentrating problems at all three of our properties and assisted in showing our operations to Messrs. Bartley and Hancock, operating officials of Steep Rock Iron Mines, Ltd.

In JUNE, I attended meetings of the Technical and the Special Sampling Committees at the Battelle Memorial Institute, Columbus, Ohio. At that time we reviewed, with the Battelle staff members assigned to research on concentrating taconite and jasper, the results they had accomplished to date. Mr. Holt and I showed Mr. E. W. Davis, Director of the Mines Experiment Station at Minneapolis, around the Marquette Range. In particular, we visited several localities of iron formation which offer the most promise for concentration in the years to come.

I made two trips to the Mesaba Range. Enroute on one trip, I conferred in St. Paul with Mr. Frank E. Downing, engineer for the Minnesota State Tax Commission, on a new estimate, then being prepared, of the Hill-Trumbull reserves. Later, on that trip, Messrs. Downing and C. J. O'Connell, also of the Minnesota State Tax Department and I, made an inspection of the Hill-Trumbull pit. Messrs. W. A. Sterling, E. G. Sterling and Foucault accompanied us. I was accompanied, on my second trip to the Range, by Messrs. Barber and S. L. Mather. We went over the exploring and concentrating problems at our several Minnesota properties and examined two or three properties that had been offered us.

In JULY, Mr. Stakel and I accompanied Company Directors on their visit to Duluth and the Mesaba Range on the 5th and 6th. The Directors present were Messrs. W. G. Mather, Greene, Brainerd, Gund and Williamson. I took part at conferences in Ishpeming with Messrs. Merryweather and Peterson of the Bethlehem Steel Company, and with Messrs. Tutein and Sweeney of the O.P.A.

I spent two days in Cleveland with Mr. C. W. Allen in conference with Messrs. Brown, S. L. Mather, Barber and others, in the preparation of a preliminary report on the Spies Exploration, and at a meeting of these gentlemen with Messrs. Miller and Page of ARMCO, and McFarlane and Hewitt of the Wheeling Steel Corporation. This meeting was preliminary to the anticipated formation of a company to mine the ore recently developed at the Spies Exploration. The proposition did not crystallize, however.

In AUGUST, I made one trip to the Mesaba Range. On my return, I called on Professor Lambert at the School of Mines, University of Minnesota, Minneapolis and left with him our recently completed revised estimate of the Hill-Trumbull reserves, together with maps, cross-sections and all supporting data. Professor Lambert checks all reserve estimates for the State Tax Commission.

I attended the regular quarterly meeting of the Board of Directors of Consolidated Coppermines Corporation, of which I am a member, in New York City. On my return, I conferred with Messrs. Merryweather and W. L. Cumings, and other officials in Bethlehem and Messrs. Peterson and Steffensen at Lebanon, all of the Bethlehem Steel Company.

In SEPTEMBER, I made one trip to the Mesaba Range and Minneapolis relative to our current operations and beneficiation problems. When Messrs. Munson, of the U. S. Steel Corporation, Jacobs, of the Bethlehem Steel Company, and Mr. Greene visited the Marquette Range, I went over with them the general geological features of the Range and the various current operations. Later, Mr. S. L. Mather was here and we conferred on our current exploration data and plans for future drilling.

In OCTOBER, Mr. W. L. Cumings, geologist for the Bethlehem Steel Company, and I examined an iron ore occurrence in Quebec about 65 miles North-east of Ottawa. This is Land Offer No. 2300 and is covered by a special report. On returning, I stopped at our Cleveland office to confer with Messrs. Geffine, Kneip and Gordon in connection with depletion problems. Later in the month, these problems were pursued further with Messrs. Kneip and Gordon in Ishpeming and on the Mesaba Range.

I went to the Cleveland office again, on October 24th, to confer with Messrs. Greene, Brown, S. L. Mather and others on the question of concentrating some of the Company's Marquette Range siliceous ores. I conferred in Ishpeming with Messrs. Stakel and Allen, representing the Company, and Messrs. Chisholm, David, Knoll, Bailey and Schieber representing Pickands Mather and Company, on problems at the Athens Mine.

In NOVEMBER, I spent two days at the Steep Rock mine in Ontario going over the drilling and exploration work completed since my last visit to the property in March 1942. I also went over all of the development work to date in opening the mine for open pit production and joined with Mr. Holt, who accompanied me, in the preliminary phase of a new estimate of reserves in the "B" ore body. On returning, I went to the Mesaba Range and then to St. Paul where Messrs. Walter Sterling, Donovan and I joined Mr. Bubbin attendance at the ad valorem tax hearing before the Minnesota Tax Commissioner.

On returning from a regular meeting of the Directors of Consolidated Coppermines Corporation in New York City on November 27th, I spent two days in Lebanon, Pa., with Mr. Stephensen of the Bethlehem Steel Company. We went

over various phases of concentrating the richer portions of Marquette Range jaspers in which our companies are mutually interested.

In DECEMBER, I stopped off for one day at the Cleveland office, on returning from Lebanon, Pa., the last of November, to confer with Mr. S. L. Mather on current drilling and exploring problems.

BURTON H. BOYUM. Mr. Boyum continued as Assistant Geologist throughout the year. He spent 66% of his time on the geological surveys, maps and cross-sections of our operating mines; 21% on the current drilling explorations and 13% on miscellaneous duties included in the routine work of the Department. Although he made underground geological surveys, and posted this information on the geological maps, of the development work in all our operating mines, more or less regularly, the Cliffs-Shaft mine continued to occupy the largest single percentage of his time. Development of the new Spies ore body at the 4th Level elevation, followed closely by the Mather mine, were next in time allotted.

Mr. Boyum made a joint geological survey of the old workings in the Lake Superior Hard Ore mine, recently unwatered by the Oliver Company, with geological personnel of that company. This will help us in years to come when we undertake to explore the old Barnum portion of the Cliffs-Shaft mine adjoining the Hard Ore mine on the North. In connection with the current drilling, he has classified all of the drill cores and samples and prepared the daily and weekly drill reports.

GROVER J. HOLT. Mr. Holt was not classified as a member of the Geological Department. His headquarters continued to be with us during the year, however, and he has assisted me frequently in many of the problems presented to the Department, - especially of a metallurgical nature. Also, I have made generous use of his time in connection with the examination of and reporting on several mineral properties offered to the Company. On January 1st, 1945, he became the Chief Engineer of the Company.

MAXWELL H. MADSEN. Mr. Madsen was engaged to do both the geological and engineering work in the Cliffs-Shaft mine. His training for these duties has continued throughout the year, and under the close supervision of Mr. Boyum in geological work. On account of the shortage of engineering personnel, he has looked after the engineering work at the Tilden mine open pit operations during the past year. Because a larger part of his time has been spent in engineering work, he now is classified as a member of the Engineering Department. A detailed record of his activities, therefore, will be found in the Annual Report of that Department.

ARCHIE MINNEAR. Mr. Minnear continued as Draftsman and Office Assistant with the Department throughout the year. Approximately 75% of his time was spent in map work associated with the geological surveys of our operating mines which included the Morris mine, leased to the Inland Steel Company, and 25% on miscellaneous duties included in the routine work of the Department. Much of the latter time was spent in calculating the average analyses of ore encountered in our current drilling. He assisted Mr. Allen in the core room before Mr. Olson was engaged for this purpose.

E. A. ALLEN. Mr. Allen spent about 68% of his time collecting, labelling, sampling and filing diamond drill core and sludge samples from the current explorations and in making tests for dip and bearing of the drill holes with the Maas Compass, wherever this data was required. He made thin sections and polished sections of rock specimens and drill cores whenever necessary for microscopic study by Mr. Boyum and me. About 2% of his time was charged to the Engineering Department for the weekly observations of water levels in the various deep well holes from the surface of the Maas and Ne-gaunee mines, which he made during the year. These wells were drilled for the purpose of observing and plating the fluctuations and drainage of surface water over the ore bodies in these mines. The rest of his time was spent on routine office duties.

GEORGE M. OLSON. As stated above, Mr. Olson was engaged on February 24th as a sampler. He has spent 94% of his time assisting Mr. Allen in the core room and at the drills. This work consists chiefly in labelling and filing drill core and sludge samples from the current drilling and making Maas Compass tests in the holes as drilling progresses. Also, he has assisted in making thin sections and polished sections for microscopic examination. The rest of his time was spent on routine work.

MRS. BELLE F. BLOCH. Mrs. Bloch joined the Department on September 18th as an office assistant. Primarily she records the daily progress of current drilling and analyses of drill samples in our permanent record books, types the daily and weekly classification of drilling reports and assists in calculating the average analyses of all ore encountered. She colors, with paint or crayon, the numerous prints of explorations and maps that accompany various reports prepared in the Department and performs a wide range of lesser office duties which are essential to a smooth running organization.

C. SURFACE GEOLOGICAL SURVEYS

No important or extensive geological surveys were made during the year. Limited areas at the Cambria and Republic mines and in the Tilden district were gone over again to examine and sample outcrops for data to use in discussing subsequent possibilities of concentrating the richer portions of the jaspers into a high grade product.

We cooperated closely with a party of geologists from the U. S. Geological Survey, Washington, D. C., who are making a detailed study of the entire Iron River-Crystal Falls district, both surface and underground, in the work they did on the Spies and Virgil properties. The party is under the leadership of Dr. Carl E. Dutton. The purpose of the survey is to correlate and consolidate the geological data of each individual mine operator, check his conclusions, fill in, as far as possible, all gaps from their own studies and publish the entire results in both report and map form for the common benefit of all interested parties. The field work started in 1943 and will be continued, I understand, in 1945.

D. MINE GEOLOGICAL SURVEYS AND OPERATIONS

Underground geological surveys of the current mine extensions and development work were made during the year in all of our operating mines. The main level developments, and the newly opened and more important areas in the mine workings of our soft ore mines, were surveyed and mapped by Mr. Boyum. Geological data in the balance of the soft ore workings was obtained by the engineers at the several properties and turned over to the Geological Department for mapping. Detailed geological surveys were made in all of the workings of the Cliffs-Shaft mine by Messrs. Boyum and Madsen. All geological data collected was posted on the geological maps and cross-sections of each property.

The Athens, Lloyd and Maas mines operated three 8 hour shifts five days per week and one 8 hour shift on Saturdays through June 30th.

The Negaunee mine operated three 8 hour shifts five days per week and one 8 hour shift on Saturdays through May 15th, when it changed to two 8 hour shifts five days and one 8 hour shift on Saturdays through June 30th.

The Cambria-Jackson, Princeton and Spies-Virgil mines operated two 8 hour shifts five days per week and one 8 hour shift on Saturdays through June 30th.

From July 1st to the end of the year, the Athens, Cambria-Jackson, Maas, Negaunee, Princeton and Spies-Virgil mines operated two 8 hour shifts five days per week. The Lloyd mine continued to operate three 8 hour shifts five days per week.

The Mather mine operated three 8 hour shifts five days per week and one 8 hour shift on Saturdays through July 31st and eliminated the Saturday shift thereafter.

The Cliffs-Shaft mine operated two 8 hour shifts six days per week throughout the year.

The Tilden mine open pit operated from May 8th to October 30, inclusive. The hours of operation each day, as in the past, were geared to the schedule of boat shipments.

E. OPTIONS AND LEASES

No options to explore, nor mining leases, were taken and no mining leases were surrendered, by the Company, during the year.

F. EXPLORATIONS AND COSTS

Drilling explorations were carried on in 1944 in the following Districts and Mines:

F-1. -- FROM SURFACE

<u>DISTRICT</u>	<u>RANGE</u>	<u>PROPERTY</u>
Coleraine	Mesaba	Canisteo Mine
Marble	"	Hill-Trumbull Mine
Taconite	"	Holman-Cliffs Mine
Crosby	Cuyuna	Pontiac Mine
Ishpeming	Marquette	Section 1, Exploration
"	"	Mather Mine
"	"	Section 3, Exploration
North Lake	"	Section 5, Exploration
Gwinn	Swanzy	Princeton Mine
Iron River	Menominee	Spies Exploration

F-2. - FROM UNDERGROUND

<u>DISTRICT</u>	<u>RANGE</u>	<u>MINE</u>
Negaunee	Marquette	Cambria-Jackson
Ishpeming	"	Cliffs-Shaft
North Lake	"	Lloyd
Negaunee	"	Maas
Ishpeming	"	Mather
Negaunee	"	Negaunee
Gwinn	Swanzy	Princeton
Iron River	Menominee	Virgil

Table V, which follows, gives the footage drilled, the ore encountered and the cost per foot of drilling for both surface and underground explorations. It will be noted that the average cost of surface drilling was \$5.95 per foot, excluding certain overhead items which customarily are charged to the explorations. By including these items, the average cost of surface drilling was \$6.74 per foot. The cost of underground drilling, in the same way, was \$3.53 per foot and \$3.85 per foot, respectively.

By comparison with 1943, the cost of all drilling in 1944 showed an increase of \$0.22 for the drilling alone and an increase of \$0.20 after including the overhead items. This increase occurred entirely in the cost of underground drilling and was due to a larger proportion of deeper holes. Also, due to the broken condition of the ground, many of the holes had to be drilled with a large diameter, in order to allow for casing.

F-3. - DIAMOND DRILL CARBON AND BORTZ

The following tabulation shows the amount and inventory value of the diamond drill carbon and Bortz on hand at the beginning of the year, the amount purchased during the year, the amount used during the year, and the balance on hand at the end of the year:-

	<u>Carats</u>	<u>CARBON</u> <u>Amount</u>	<u>Per Ct.</u>	<u>Carats</u>	<u>BORTZ</u> <u>Amount</u>	<u>Per Ct.</u>
On hand Jan. 1, 1944	1,031.08	\$76,793.10	\$74.48	139.65	\$1,099.51	\$7.87
Purchased during 1944	139.83	10,968.15	78.44	112.41	684.29	6.09
Inventory adjustment	-	6,846.69	-	-	-	-
Total	1,170.91	\$94,607.94	\$80.80	252.06	\$1,783.80	\$7.08
Used during 1944	199.21	14,977.00	75.18	156.83	1,166.32	7.44
On hand Dec. 31, 1944	971.70	\$79,630.94	\$81.95	95.23	\$ 617.48	\$6.48

In addition to the above Carbon and Bortz, all of which is hand set by our own organization, we are using an increasingly large number of mechanically set Bortz bits which we purchase ready for use. After each bit has ceased to cut, it is returned to the manufacturer for a salvage credit. The good Bortz remaining is cut out and reset.

F-4. - DRILL SECTIONS

Cross-section tracings of all drilling, showing the analyses and classifications of the material encountered during the year on the Marquette and Menominee Ranges, in colors, will be found in the Annual Report books that are submitted as a part of the Annual Report of the Engineering and Geological Departments.

G. DESCRIPTION OF EXPLORATIONSTHE CLEVELAND-CLIFFS IRON COMPANYG-1. - EXPLORATIONS IN SECTION 3, 47-27, MICHIGAN

The drilling during 1944 in Section 3 continued to be confined to two forties which are leased from the Oliver Iron Mining Company, - namely, the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ and the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$. The lease on these descriptions expires on July 1, 1974.

In the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, hole No. 38 was drilling in the lower member of the main greenstone sill at a depth of 941' at the beginning of the year. This hole was drilled vertically on the 16000 W. meridian on the North shore of Lake Bacon, otherwise known as Mud Lake. The purpose of the hole was to continue a cross-section of the iron formation on this meridian which was begun by hole No. 34 located 400' due North and drilled through to the Siamo slate footwall in 1943. Hole 38 encountered 29' of high grade ore lying on the slate at a depth of 2251' to 2280'. This ore averaged 61.52% iron, 0.158% phos. and 0.017% sulphur.

Hole No. 41 is being drilled vertically and approximately on the same meridian as No. 38, and about 350' South of it, to explore for an extension of the ore discovered in the latter hole, and with the hope that it may become thicker down the dip. The hole was drilling in the lower horizon of the iron formation at a depth of 1801', some five hundred feet or more above the anticipated ore, at the end of the year.

In the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$, hole No. 39 was standpiping in surface material at a depth of 35' at the beginning of the year. This hole was drilled vertically on the 19,800 W. meridian just a few feet North of the South line of the forty. This is the fourth hole to be drilled on this meridian in outlining the fault structures controlling the deep Section 3 ore deposit some 400' to the East, in an attempt to trace a sizeable Westerly extension of this ore. Twenty-one feet of ore was encountered just above the Siamo slate footwall at a depth of 2228' to 2249'. This ore averaged 59.11% iron, 0.183% phos. and 0.015% sulphur. It is quite likely that it is an extension South and down the dip of the 13' of ore encountered in a similar structural position just above the footwall slate in hole No. 33 some 200' to the North. Also, from its structural relationship in a fault block, this ore probably is the Westerly extension of the Section 3 deep ore body but, if so, it has thinned to an uncommercial thickness. This, of course, may be only local and I believe additional drilling to the West in this structure is warranted.

Two holes, Nos. 40 and 42, have been completed and a third started, on the 20,550 W. meridian in the West central part of the forty. Holes 40 and 42 were drilled vertically 350' apart with hole 40 to the South of 42. Hole No. 43 is being drilled with a dip of -70° due North from the same location as No. 42. It was standpiping in boulders and gravel at a depth of 121' at the end of the year. From the drilling done previously, it is apparent that there is at least one fault cutting this area with a Northwest-Southeast strike and a steep dip to the South. There may be others. The purpose of these holes is to cross-section the area to determine the structural pattern and to explore for possible ore within this faulted area. Holes 40 and 42 were bottomed in the footwall, - hole 40 at 1536' and hole 42 at 1328', - without encountering high grade ore but the results obtained are highly valuable in tracing the fault structure to the West, and in which ore may be found as our exploring is expanded in that direction.

G-2. - EXPLORATIONS IN SECTION 5, 47-27, MICHIGAN

Drilling in the N $\frac{1}{2}$ of the S $\frac{1}{2}$ of this Section, which was resumed in March 1941, continued throughout the year, using one drill rig. Progress has been irritatingly slow. In the first place, due to the manpower shortage, we have been able to operate on only a one shift basis a part of the time, and with runners of pension age. Secondly, the dip of the iron formation in this locality is very steep which, for deep vertical holes, results in a much slower advance than where the bit cuts across the bedding at an appreciable angle.

Holes Nos. 29, 30 and 31, which were drilled in 1943, discovered a fault striking Northwest and Southeast and dipping steeply to the Northeast. The intersection of this fracture with the slate footwall displaced the latter to form a crotch favorable for the concentration of an ore body. Hole No. 32 was drilled vertically into this crotch on the 9100 E. meridian and about 200'

of old hole No. 4. It was bottomed in footwall slate at 1204'. The iron formation was enriched from 1012' to 1090' but no high grade ore was encountered.

Hole No. 33 is being drilled vertically on the same Meridian but 200' farther South, to go deeper into the crotch. It had reached a depth of 1615' at the end of the year. With the exception of one dike, from 1529' to 1552', the ground has been a rich and favorable looking iron formation.

G-3. - PRINCETON MINE SURFACE, SECTIONS 19 & 20, 45-25, MICHIGAN

A series of thirteen shallow 9" churn drill holes and two test pits were sunk in the area above the Princeton mine ore body in the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 19 and the West 1/2 of the NW $\frac{1}{4}$ of Section 20. All the work, with the exception of one hole near the dividing line, was done on Section 20. The purpose was to study the water conditions in the ledge, most of which is Cambrian sandstone, and the installation of a pumping program to catch most of the water on the surface which may be the source of troublesome water conditions in parts of the mine workings.

G-4. - SPIES EXPLORATION, SECTION 19, 43-34, MICHIGAN

Drilling on the Johnson Lease, - the SW $\frac{1}{4}$ of Section 19, - continued until September 26th with the work being done by the E. J. Longyear Company, under contract. Two rigs were used on a two shift, six day basis. During the remainder of the year, these drills were used on Spies fee lands in Section 24, 43-35, and one of them, for a time, underground in the Virgil mine.

Hole No. 1 had been completed and Nos. 2 and 3 started at the beginning of the year. No. 2 was drilled from a location on the Bates property in the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ about 140' North of the Johnson Lease and 300' North of hole No. 1. Holes Nos. 3 and 4 were located on the same Meridian, at intervals of 300' South from hole No. 1. These four holes were drilled due West at dips between -64° and -70°. The strike of the bedding in the rock formations cut by holes 1, 2 and 3 is nearly North-South and the dip steep but folded. All three holes encountered the ore body and demonstrated its horizontal thickness to be approximately 60'. Hole No. 4 did not cut the ore and encountered only small thicknesses of iron formation alternating with slate. We believe this is explained by a general folding of the formations to an East-West strike.

Holes Nos. 5, 6 and 7 were located on a North-South line about 125' West of the Meridian through holes 1 to 4 inclusive. No. 5 was due West of No. 3; No. 6 due West of No. 1; and No. 7 due West of No. 4. The purpose of holes 5 and 6 was to find out if the ore bearing iron formation was repeated to the East, either as a separate underlying horizon or by steep folding. The purpose of No. 7 was to confirm the general folding of the whole series of formations, resulting in an East-West strike, which was indicated in hole 4, and also to get some idea of its extent and ore bearing characteristics. All three holes were drilled due East with dips between -64° and -68°.

No repetition of ore by steep folding, nor underlying ore bodies,

were encountered. In hole 7, however, the general folded structure was confirmed and 25' of ore was cut from 765' to 790' which averages 57.72% iron, 0.316% phos. and 0.066% sulphur. It is believed, however, from banding in the core, that this hole followed nearly parallel with the strike and cut only the edge of an ore body. It is planned to crosscut this structure with a horizontal hole drilled Southeasterly from the East end of the new 4th Level drift. Hole 7 encountered a rich cherty iron formation with numerous seams of lean and second-class ore almost its entire distance and was bottomed in dark gray slate at 1435' on September 26th. This completed the drilling on Section 19 (Johnson lease) for the year.

G-5. - SPIES EXPLORATION, SECTION 24, 43-35, MICHIGAN

Before hole No. 7, Section 19, described above, had confirmed the general folding indicated in hole 4, Section 19, it was thought best, in order to save time and to speed up getting a clearer picture of what happens to the ore body in its extension South from hole No. 3, Section 19, to drill a hole due East with a dip of -65° from a point in Section 24, about 425' due West of No. 4, Section 19. No. 68 is the number of this hole. A considerable delay was experienced in standpiping to ledge and it was bottomed in slate at 207'. By this time, the results in hole 7 appeared to be conclusive.

No. 69 is the number given to the large diameter hole being sunk by the Layne-Northwest Company on the site of a proposed ventilation shaft to connect with the new 4th Level drift. It will be discussed as an operating item by Mr. Marjama in his Annual Report.

The problem of locating the productive cherty iron formation which carries the new Spies ore body, in its trend to the West, possibly along the South side of Spies property in Section 24, is underway. The first test was made in hole No. 70. This hole was drilled with a dip of -65° due South from the site of hole No. 68. It cut a considerable footage of unoxidized iron carbonate in slate but no cherty iron formation, and was bottomed at 970'. Hole No. 71 is being drilled with a dip of -60° and due South on the same Meridian and 400' South of No. 70. It ledged in a mixture of cherty gray slate and unoxidized iron carbonate at a depth of 248' and was still drilling in it at a depth of 365' at the end of the year. As I am writing this, however, the hole has been in rich cherty iron formation for more than 100'.

Hole No. 72 is located in the NW¹/₄ of the NW¹/₄ of Section 24, 450' South and 125' East of the Northwest corner of the Section. It is being drilled vertically. The James mine lies immediately West of this forty. James mine underground hole No. 24, which was drilled down from the first sub above the 6th Level, encountered over 60' of high grade ore at a depth of 860' below the surface and only 250' West of the Spies West line. A study of the James mine geological maps and cross-sections, permission for which was granted me, developed the possibility that this ore occupies the North limb of a Westerly pitching synclinal structure which may extend onto Spies property as it rises to the East. The purpose of hole No. 72 is to explore this possibility. It was drilling in banded gray slate (probably hangingwall material) at a depth of 434' as the year ended.

G-6. - PONTIAC MINE SURFACE, SECTION 34, 47-29, MINNESOTA

The program of structure drilling, which was commenced on the Pontiac early in April 1943, continued until April 21, 1944. The purpose of this work was to get samples of the West ore body, already quite well defined by previous diamond drilling, sufficient in size and coarseness from which to make a series of sink and float tests for metallurgical determinations. The holes were drilled under contract by J. S. Schultze & Sons of Grand Rapids, Minn., with a standard Mesaba Range structure drill rig and inside of 3 inch casing.

Eight holes were completed in 1943. All holes are located on cross-sections established by the former diamond drill holes and are carried down about 155'. This depth allows about 90' into ledge, or to the elevation of the bottom of the proposed open pit by which it is planned to mine the upper part of the wider portion of this ore body.

Five holes, Nos. 378 to 382, inclusive, were drilled in 1944. After exhaustive studies had been made on the samples from all thirteen holes, in our metallurgical laboratory on the Mesaba Range, Mr. Holt and I prepared a detailed estimate of the cost of opening and equipping the property for production. It is interesting to note that the structure holes checked the grade of crude ore, as determined by our own diamond drilling, remarkably close.

G-7. - CAMBRIA-JACKSON MINE

Drilling in the Cambria-Jackson mine was confined to four holes which were needed to assist the operator in laying out his development work. All were drilled horizontally and to the South from the 7th Main Level and on the Jackson Strip. They were numbered 159 to 162, inclusive. Holes 159 and 160 were carried across the South boundary onto the Jackson property, leased to the Negaunee Mine Company, in order to reach objectives that influence the locations of ore bodies in this area.

A total of 1453' of drilling was done and 398' of high grade ore encountered. The last hole, No. 162, was not completed until January, 1945, and was drilling at a depth of 210', in rich soft ore jasper, at the end of the year. It had cut two runs of high grade ore which are not extensions of known ore bodies during December, and cut a third before being completed on January 12th.

G-8. - CLIFFS-SHAFT MINE

Drilling was continuous in the Cliffs-Shaft mine throughout the year, using two drill rigs. Seventeen holes were completed and 2 holes partially drilled for a total of 5789'. The holes were numbered from 533 to 552, inclusive, except for No. 534, which was completed late in 1943. This drilling developed a total of 435' of high grade ore (above 57% iron); 120' of second-class ore (from 50% to 57% iron); and 58' of lean ore (from 45% to 50% iron). A considerable portion of the second-class ore, where it is adjacent to high grade ore, will be mined and mixed with the latter for shipment.

In reviewing the drilling, the holes will be considered by levels instead of in their chronological order.

On the 1st Level, "A" Shaft, three holes were drilled, - Nos. 536, 538 and 539. All of them were located on the South side of a stope at the Southeast end of the Level, close to the North boundary of the Section 10 Lease. They were drilled South from the same location; one horizontally and the other two with dips of -30° and -50°. The purpose of the holes was to explore the downward trend of the ore mined from the stope and plan its development on lower elevations. The horizontal hole, No. 539, was carried considerably beyond this objective, however, in order to crosscut the various formations on the Section 10 Lease in a new area about which we know very little. It was drilled practically to the South boundary of the Lease.

On the 1st Level, "B" Shaft, one hole, No. 544, was drilled horizontally and due South from a point about 1036' West of the shaft, or approximately half way between the last ore producing stope and the West end of the drift extending along the hangingwall side of the iron formation. The purpose of the hole was to crosscut the thickness of the iron formation extending South to a major East-West fault along which, to the East, a number of ore bodies have been mined. No ore was encountered, however.

On the 3rd Level, "A" Shaft, hole No. 533, was drilled horizontally and S. 10° W. from the South side of the Level to explore for a possible ore body under the faulted hangingwall on the Section 10 Lease. The hole was started in November, 1943 and had reached a depth of 578' on the first of the year. It was bottomed at 622' on January 8th, 1945. Forty-nine feet of high grade ore was cut at the very start of the hole and reported last year, but no ore was found at the fault contact.

On the 5th Level, "A" Shaft, two holes were drilled, - Nos. 549 and 551. They were drilled horizontally and due South two-hundred feet apart from the stope along the North side of Section 10 Lease in order to explore for the upward extension of the ore encountered on this Lease in hole No. 548 which was drilled from the 8th Level. Both holes cut the ore. Hole No. 549 encountered 54' which averaged 63.57% iron and 0.128% phos. Hole No. 551 cut 102' that averaged 63.73% iron and 0.114% phos.

On the 6th Level, "A" Shaft, one hole, No. 552, is being drilled horizontally and due South from the South side of the Level to continue exploring the Section 10 Lease. It crossed onto the Lease at a depth of approximately 115' but had not reached its objective (an East-West fault) at the end of the year at a depth of 246'.

On the 8th Level, "A" Shaft, three holes were drilled, - Nos. 547, 548 and 550. All were drilled horizontally and due South from the South side of the Level on to the Section 10 Lease to locate and outline the main ore body on this Lease. Hole No. 547 failed to encounter the ore but Nos. 548 and 550 both cut it. Hole 548 encountered 56' which averaged 60.30% iron and 0.216% phos. Hole 550' cut 25' which averaged 59.73% iron and 0.181% phos. Apparently the ore horizon is faulted out at this Level along the meridian followed by hole No. 547.

On the 9th Level, "A" Shaft, one hole, No. 535, was drilled with a dip of -34° due South from the floor of a stope on the Bancroft Lease, near the Northeast end of the Level. The purpose of the hole was to determine the extent of the ore below the stope and to ascertain if a raise from the

15th Level is warranted. Three runs of ore were cut as follows: From 0' to 49', 64.85% iron and 0.178% phos.; from 68' to 105', 64.04% iron and 0.111% phos.; and from 121' to 141', 59.35% iron and 0.147% phos. Most of the ground between these ore runs, although a little lean, will be mined and mixed with the high grade product.

On the 10th Level, "A" Shaft, four holes were drilled, - No. 537, and Nos. 540 to 542, inclusive. Hole 537 was drilled horizontally and S. 10° W. from the Southeast end of the Level to try and intersect an Easterly extension of ore that has been stoped to the West. The ground was barren. Holes 540, 541 and 542 were drilled horizontally but in different directions from the extreme Northwest end of the Level on the Bancroft Lease. The purpose here was to make a thorough test of the footwall side of the main Easterly pitching syncline on this Lease. Unfortunately, the area was found to be barren.

On the 12th Level, "A" Shaft, one hole, No. 543, was drilled horizontally and N. 23° E. from the Southeast end of the Level to explore the foot-wall complex for possible down-droppers of ore which has been encountered at higher elevations. The ground is barren.

On the 15th Level, "A" Shaft, two holes were drilled, - Nos. 545 and 546. They were located 300' apart, and drilled horizontally and due North from the East end of the Level. The purpose of these holes was to explore the ground between the drift and the slate hangingwall contact to assist the operator in locating raises to be put up from this elevation to the 10th Level. Hole 545 found that faulting had offset the ore horizon to such an extent that it was unlikely to reach down to the 15th Level along this Meridian. No. 546, however, which is the Westerly hole, encountered ore from 70' to 81' that averaged 57.52% iron and 0.109% phos., and from 117' to 133' that averaged 58.47% iron and 0.160% phos.

G-9. - LLOYD MINE

One drill operated continuously throughout the year in the Lloyd mine. At times, also, a second rig was employed. Eleven holes were completed and the 12th partially drilled for a total of 3227'. This drilling developed 444' of high grade ore.

On the 7th Level, two holes were drilled, - Nos. 164 and 166. Both were drilled horizontally, - No. 164 on a course of S.43° E., and No. 166 on a course of S. 48° W., - from the main drift near the crosscut leading to the shaft. The purpose of the holes was to confirm, if possible, an indicated fault structure formed by the intersection of a dike with the slate footwall. If such a structure exists, it will form a crotch favorable for the concentration of high grade ore at lower elevations. Also, these holes were intended to aid in locating additional holes on the 8th Level. The results apparently bore out our conception of such a structure.

On the +300' Sub-Level, (106' above the 8th Level), No. 161, was drilled horizontally and due North along the 1970 E. meridian to explore the strip of iron formation lying along the North slate footwall. Only 6' of good ore was encountered but it was enclosed in 36' of high grade siliceous ore that can be mined with it. The good ore averaged 59.33% iron and 0.125%

phos. The siliceous ore averaged between 52.5% iron and 54.9% iron.

On the 8th Level, seven holes were completed, Nos. 159, 160, 162, 163, 165, 167 and 168, and two holes were partially drilled, - Nos. 169 and 170. Five holes, Nos. 159, 160, 162, 163 and 167, were drilled to cross-section and define the main ore body at and below the 8th Level elevation. This ore is confined to a fault crotch formed by a major displacement in the footwall slate. The South limit is marked by a diabase dike. Hole No. 167, which was inclined at -50° to the South, was drilled through the dike after crossing the main ore body and encountered another body of ore before reaching the faulted block of slate marking the South limit of the major displacement. Hole No. 170 is being drilled horizontally and due South on the same meridian to find out if this ore comes up to the elevation of the Level. It was only 10' deep at the end of the year.

Holes 165 and 168 were drilled horizontally and to the South in the area West of the main ore body on the 8th Level to explore two other faulted offsets in the slate footwall forming crotches favorable for the concentration of high grade ore bodies. These structures were first discovered by previous drilling from the 7th Level. Hole No. 165 encountered 10' of high grade and 32' of siliceous ore but No. 168 missed the crotch and was blank. Hole No. 169 is being drilled horizontally and S. 35° W. from the same location as No. 168. It cut through one crotch near its East apex and encountered 13' of ore, from 279' to 292', which averaged 59.16% iron and 0.203% phos. It was drilling in iron formation, in its faulted position, at 529' at the end of the year.

G-10. - MAAS MINE

One, and, at times, two drill rigs were operated in the Maas mine off and on during the year. Six holes were completed for a total of 2754'. This drilling developed 690' of high grade ore but most of it is high in sulphur content and will have to be mixed with Standard ore, or sold at a discount as a Special or off-grade ore.

On the +130' Sub-Level, (150' above the 5th Level), one hole, No. 55, was drilled horizontally and S. 50° W. to assist in outlining the ore for development at this elevation.

On the 5th Level, three holes were drilled, - Nos. 54, 56 and 59. Hole 54 had been located and drilled to a depth of 685' in 1943. It was drilled horizontally and due South on the 1800 W. meridian, principally to crosscut the iron formation on Pioneer and Arctic property just South of the Maas. Sixty-four feet of high grade was encountered between 1176' and 1240' including three very narrow dikes. The ore was high in sulphur content, however. The iron averaged from 53.65% to 62.95%, phos. from 0.061% to 0.076%, and sulphur from 0.399% to 0.886%. The hole was stopped in iron formation at 1315' when it had reached the North boundary of the Athens mine.

Holes 56 and 59 were drilled with a dip of -32° from a stub drift on the West side of the 1800 crosscut. No. 56 was drilled on a course of N. 73° W. and No. 59 on a course of S. 58° W. The purpose of these holes was to follow the main ore body on its pitch to the West to determine the grade of ore that might be tributary to the 6th Level and, if possible, to the pro-

posed 7th Level. Ore extended to a depth of 265' in hole No. 56 and to 230' in No. 59. Practically all of it was of high sulphur content. The slate footwall was found to be some 200' higher in these holes than anticipated. Either it is folded into a local anticlinal structure, or else there is a decided flattening of the pitch by a roll of considerable magnitude.

Holes 57 and 58 were drilled from the West end of the North drift on the 6th Level, - No. 57 vertically and No. 58 with a dip of -39° due South. The purpose of these holes was to cross-section and define the Northwest end of the ore body on the 2100 E. meridian. Hole No. 57 drilled in ore to a depth of 60' and No. 58 in ore to a depth of 110'. It was all of high sulphur grade.

G-11. - PRINCETON MINE

Six holes were completed and another started in the Princeton mine for a total of 1033'. Two-hundred and twenty-five feet of ore was encountered.

Two holes, Nos. 8 and 11, were drilled from the 6th Level. Hole No. 8 was drilled horizontally and S. 86° W. from the hangingwall drift to explore the hanging jasper for a possible second and higher ore horizon. It was blank. No. 11 was drilled with a dip of -70° N. 30° W. in footwall arkose. This is in the line, extended, of the crosscut to the No. 3 Shaft. The purpose of the hole was for drainage and ventilation between the 6th and 7th Levels.

Hole No. 12 is being drilled vertically from the bottom of No. 3 Shaft below the 6th Level, and approximately on the center line of the shaft, extended. The purpose of the hole is to act as a guide, and assist ventilation, in raising the shaft from the 7th Level. It was drilling in footwall arkose at a depth of 2' at the end of the year.

On the 7th, four holes were drilled, - Nos. 6, 7, 9 and 10. All were drilled horizontally. Holes 6 and 7 were drilled from the Northwest side of the Level, - No. 6 on a course of S. 45° W. and No. 7 due South. The purpose of these holes was to explore for ore just above the arkose footwall at this elevation. Both holes were in arkose their entire distances which indicates an anticlinal roll in the footwall with the bottom of the ore somewhere above the Level.

Hole No. 9 was drilled S. 24° W. from a footwall crosscut South of No. 2 Shaft to explore for the Northwesterly continuation of both lobes of the No. 3 Shaft ore body. It encountered 225' of high grade ore between depths of 50' and 290'. One narrow dike and two seams of second-class ore also were cut in this footage. The hole was stopped in ore at 290' because of difficulty with a heavy flow of water and in order that crosscutting the ore might be started from the drill station. Hole No. 10 was planned to be drilled S. 84° W. from the hanging side of the No. 2 Shaft ore body to test the jasper hanging for a second possible ore horizon. Drill trouble developed when the hole had reached a depth of only 4' and the hole was abandoned in favor of other means of exploring this particular area.

G-12. - VIRGIL MINE

Two holes were drilled in the Virgil mine for a total of 1215'. One hundred and eight-four feet of high grade ore was developed but too high in sulphur content to be marketed without grading. Both holes, Nos. 127 and 128, were drilled due North from the North drift on the 8th Level approximately 200' East of the West boundary of the property. No. 127 was drilled horizontally and No. 128, with a dip of -29°. The purpose was to prove up the pattern of folding to the North of the syncline containing the main Virgil ore body and to explore for possible additional ore bodies. We believe the holes demonstrated a synclinal structure to the fold and ore was cut on the North limb. It proved to be rather thin, however, and was too high in sulphur content to be merchantable.

THE NEGAUNEE MINE COMPANY

G-13. - SECTION 1, 47-27, EXPLORATION

Drilling was continuous from the surface in the North half of Section 1 throughout the year. Except for three months, two rigs were employed. Two holes, Nos. 137 and 138, were completed, and two holes, Nos. 139 and 140, were partially drilled for a total of 5348'. All holes were drilled vertically. One-hundred and ninety feet of high grade ore was developed.

Hole No. 137 was located approximately on the North-South center line of the Section, about 1450' North of the Center and 1200' North of hole No. 136. The latter hole encountered 218' of high grade ore, at the bottom, in 1943 and was stopped in this ore at a depth of 2819' because of caving. Hole 137 was planned to continue cross-sectioning the possible ore-bearing structures along this meridian. It was started in October 1943 and had reached a depth of 957' at the beginning of the year. It was bottomed in footwall slate at 2223' and encountered high grade ore as follows:

<u>From</u>	<u>To</u>	<u>Amount</u>	<u>Iron</u>	<u>Phos.</u>	<u>Sul.</u>
1729'	1780'	51'	65.65	.040	.016
1780'	1782'	2'	54.19	.034	.016
1782'	1792'	10'	63.89	.045	.014
1989'	2022'	33'	61.05	.042	1.761
2032'	2105'	73'	58.36	.157	.928
2105'	2120'	15'	57.80	.151	.044

Hole No. 138 was located on the 6400 E. meridian in the Northeast part of the Section and 750' South of the North boundary. The purpose was to explore an area that might be considered for the site of a shaft and surface layout. Also, it would help to augment our studies of geologic structure on a meridian along which, to the South, several other deep holes had been drilled. Drilling was started in Dec. 1943 and the hole was 175' deep at the beginning of 1944. It bottomed in footwall slate at 1867' and encountered only a minor seam (8') of high grade ore.

Hole No. 139 is being drilled on the meridian through holes 136 and 137 (approximately the North-South center line of the Section) and between them. It is about 470' South of No. 137 and 730' North of No. 136. The pur-

pose is to define the geologic structure between them and, if possible, to determine the relationship of the ore in each of them. The hole was drilling in typical soft ore jasper iron formation at a depth of 1268' on the last of the year.

Hole No. 140 is being drilled on the 10200 W. meridian at about 1150' S. This places it about 130' East of the West boundary of the Section and 600' South of the South boundary of the Jackson Strip. It is the first of several holes that may be drilled on this meridian to explore the West side of Section 1 for favorable geologic structures and possible high grade ore bodies. Such ore may be either extensions of known occurrences some distance to the East and West or entirely independent ore bodies. Also, there is a major fault striking Northwest and Southeast which probably passes close to this hole and may have influenced mineralizing solutions resulting in the concentration of ore not far above the footwall slate. This fault, we believe, is an extension of the main fracture which has played an important part in the allocation of the Cambria ore bodies. The hole was drilling in typical soft ore jasper iron formation at a depth of 1112' on the last of the year.

G-14. - MATHER MINE SURFACE, SECTION 2, 47-27

Only one hole, No. 53, was drilled from surface on this description during the year, for a total of 1491'. No high grade ore was encountered.

Hole No. 53 was drilled vertically on the 12700 W. meridian, 350' East and 35' South of the North quarter corner of Section 2. It was located at the North end of the cross-section on which holes 38, 41, 50 and 51 had been drilled farther South. Hole No. 51, located about 385' to the South, encountered no high grade ore but did find considerable enriched iron formation lying close to the slate footwall. We thought this more or less barren spot might be limited in extent and also that high grade ore might continue down the dip of the footwall from the Lillie property to the North. It was quite important to explore this possibility before planning nearby underground development work above the Second Level, Mather mine. Hole No. 53, was drilled for this purpose. As noted above, it encountered no high grade ore and was bottomed in footwall slate at 1491'.

G-15. - MATHER MINE

Six holes were drilled in the Mather mine, - Nos. 7 to 12 inclusive, - for a total of 2411'. Three hundred and sixty-six feet of high grade ore was developed, although much of it was a little higher in sulphur content than Standard grade ore. All holes were drilled horizontally.

Four of these holes, - Nos. 7, 8, 11 and 12 were drilled on the Second (-1600') Level, from the breasts of crosscuts and on the Southeast courses of these crosscuts. The crosscuts had been turned off in driving the main footwall drift but were not to be carried ahead until these holes were drilled to explore the ore horizon to the South of the upper slate contact. Hole 7 encountered 35' of Standard grade followed by 17' of high sulphur ore. No. 8 was blank. Hole 11 cut 34' of Standard grade and No. 12 cut 20' of

Standard and 74' of high sulphur ore. Following the drilling, the crosscuts were advanced along the holes which encountered ore and this ore is being developed by additional drifting and raising.

Hole No. 9 was drilled S. 10° E. from the breast of the -60' Sub-Level, 75' above the Second Level, before extending the crosscut to the ore horizon. The breast was in footwall slate. Fifty-five feet of moderately high sulphur ore was cut in two runs, separated by an 18' dike and followed by 55' of Standard grade ore. It is anticipated that all of this ore may be mined, mixed and shipped within the sulphur limit of Standard ore. Crosscutting and drifting to develop this ore followed the drilling.

Hole No. 10 was drilled S. 40° E. from the breast of the crosscut at the East end of the 3rd Level (-1750'). The purpose of this hole was to explore for the continuation, down the dip, of a 75' run of ore encountered in surface hole No. 39. Ore was cut in hole 10 at a depth of 707' but it proved to be very high in sulphur, common to most of the ore developed so far on this Level. While still drilling in this ore, at 768', a flow of about 60 gallons of water per minute was encountered under a pressure of 700 lbs. per square inch. The hole was stopped to allow the ground to drain. The 61' of ore that was cut averaged 59.69% iron; .045% phos. and 1.125% sulphur. The sulphur content of this ore in hole 39 was normal and it is expected it will drop to normal again if it extends an appreciable distance down the dip below the 3rd Level.

G-16. - NEGAUNEE MINE

One hole was completed, - No. 47, - and two additional holes drilled, - Nos. 48 and 49, - for a total of 427'. This developed 252' of high grade. All holes were drilled horizontally.

Hole No. 47 was drilled S. 80° W. from the East workings on the +170' Sub-Level, about 93' above the 14th Main Level, to assist in the development of the ore in this locality. It was started in ore and was still drilling in it at a depth of 30' at the beginning of the year. A horse of jasper was encountered at 30' which extended to 60' where ore again was cut. The hole was still in ore at a depth of 165' when it was stopped. By this time, enough ore had been encountered to determine the plan of development for mining.

Holes 48 and 49 were drilled from the South workings of the +160' Sub-Level about 83' above the 14th Level. No. 48 was drilled S. 50° E. and No. 49, N. 28° W., - both laid out to assist in the plan of development in this locality. Hole 48 was drilled to a depth of 182' and stopped in ore. Hole 49 was drilled to a depth of 110' and stopped in a fault dike. This completed the drilling for the balance of the year.

The footage of high grade ore encountered in all of the above Ne-gaunee mine holes is as follows:-

<u>Hole No.</u>	<u>From</u>	<u>To</u>	<u>Amount</u>	<u>Iron</u>	<u>Phos.</u>	<u>Sul.</u>	<u>Ultimate Depth</u>
47	0'	30'	30'	57.51	.142	.016	
	60'	75'	15'	59.65	.074	.011	
	80'	155'	75'	62.21	.055	.013	
	160'	165'	5'	59.95	.298	.013	165'
48	0'	70'	70'	62.04	.046	.012	
	120'	125'	5'	64.60	.044	.011	
	135'	145'	10'	58.36	.062	.016	
	160'	182'	22'	61.43	.093	.011	182'
49	5'	50'	45'	58.89	.137	.019	
	85'	90'	5'	59.00	.050	.023	110'

THE CANISTEO MINING COMPANY

G-17. - CANISTEO MINE, SECTIONS 29, 30 & 31, 56-24, MINNESOTA.

The Cleveland-Cliffs Iron Company continued to operate the Canisteo mine, as agents of the Canisteo Mining Company of Duluth. Thirty-nine vertical structure drill holes (Nos. 649 to 687, inclusive) were drilled in the Canisteo pit and around its perimeter during the year, for a total 5,220'. This developed 2,885' of crude wash ore and jig material. Forty-five hundred feet was done under contract by rigs owned and operated by J. S. Schultze and Sons of Grand Rapids, Minnesota and the balance by Company owned and operated rigs.

Twenty-two holes were drilled on the Snyder leases, - 8 of them on the SE $\frac{1}{4}$ - SE $\frac{1}{4}$; 13 on the SW $\frac{1}{4}$ - SE $\frac{1}{4}$; and one on the NE $\frac{1}{4}$ - SW $\frac{1}{4}$, - all in Section 30. Seven holes were drilled on the South Bovey lease, - the NE $\frac{1}{4}$ - NE $\frac{1}{4}$ of Section 31. Ten holes were drilled on the Hemmens lease, - the SW $\frac{1}{4}$ -SW $\frac{1}{4}$ of Section 29. All of this drilling was in connection with current mining operations, and to determine the outline of ore under the present pit banks in order to direct stripping operations for its mining. As a result, a total of 674,336 tons of new crude ore and jig material has been added to the reserves of the property. The addition occurred all on the SW $\frac{1}{4}$ -SE $\frac{1}{4}$, Section 30, - the Mid-Snyder forty.

THE MESABA-CLIFFS MINING COMPANY

G-18. HILL-TRUMBULL MINE, SECTION 17, 56-23, MINNESOTA.

Twenty-four vertical structure drill holes were drilled in the Hill-Trumbull pit and along its perimeter during the year for a total of 2,067'. This developed 1050' of crude wash ore and jig material. All of the work was done under contract by J. S. Schultze and Sons of Grand Rapids, Minnesota.

Four holes were drilled on the Hill lease, - the SE $\frac{1}{4}$ -NW $\frac{1}{4}$; thirteen holes on the Trumbull lease, - the NW $\frac{1}{4}$ -SW $\frac{1}{4}$; and seven holes on the Trumbull lease, - the NE $\frac{1}{4}$ -SW $\frac{1}{4}$, - all in Section 17. All of the drilling was in connection with current mining operations, and to determine the ore outline under the present pit banks in order to define stripping operations for its mining. Several areas of taconite were disclosed where ore had been anticipated, with a net result that the ore reserves may have been reduced slightly. The engineer's estimate has not been completed.

G-19. - HOLMAN-CLIFFS MINE, SECTIONS 21 & 22, 56-24, MINNESOTA.

Forty-eight vertical structure drill holes (Nos. 218 to 265, inclusive) were drilled in the Holman-Cliffs pit and along its perimeter during the year for a total of 7,259'. This developed 335' of direct shipping ore and 3940' of crude wash ore and jig material. All of the work was done under contract by J. S. Schultze and Sons of Grand Rapids, Minnesota.

Nine holes were drilled on the Brown No. 2 Lease, - the SW $\frac{1}{4}$ -NW $\frac{1}{4}$ of Section 22. Thirty-three holes were drilled on the Bingham Lease, - the NW $\frac{1}{4}$ -SE $\frac{1}{4}$; and six holes on the North Star Lease, - the NW $\frac{1}{4}$ -NE $\frac{1}{4}$, - both in Section 21. All drilling was in connection with current mining operations, and to determine the ore outline under the present pit banks in order to define stripping operations for its mining. As a result, a total of 175,089 tons of new ore has been added to the reserves of the property. The addition occurred all on the Bingham Lease.

H. - EXAMINATION OF MINERAL LAND OFFERS.

A total of 40 land offers was received by this office during the year 1944. Twenty-seven were mineral land offers and the remaining 13 were offers of real estate in the City of Negaunee. The offers and their numbers are as follows:

<u>Offer No.</u>	<u>Description</u>	<u>Remarks</u>
2279	House and parts of Lots 10 & 11, Block 25 Pioneer Iron Co. Plat, Negaunee	Purchased
2280	SE $\frac{1}{4}$ -SE $\frac{1}{4}$, Section 22, 58-20, Minnesota	Declined
2281	Lot 6, Block 27, Pioneer Iron Co. Plat, Negaunee	"
2282	SE $\frac{1}{4}$ -SE $\frac{1}{4}$, Section 21, 58-20, Minnesota	"
2283	Schley & Hobart Mines, Mesaba Range, Minnesota	"
2284	Various descriptions on Cuyuna Range, Minnesota	"
2285	NE $\frac{1}{4}$ -SW $\frac{1}{4}$, Section 34, 47-29, Cuyuna Range, "	Purchased
2286	Lot 5, Block 11, Pioneer Iron Co. Plat, Negaunee	Declined
2287	Various descriptions in Itasca & St. Louis Counties, Minnesota	"

<u>Offer No.</u>	<u>Description</u>	<u>Remarks</u>
2288	Low grade iron ore in limestone in Minnesota	Declined
2289	House and lot at 102 West Main St., Negaunee	"
2290	W $\frac{1}{2}$ Lot 13, Block 4, Jackson Iron Co. Addition, Negaunee	Pending
2291	House only at 211 Cyr St., Negaunee	"
2292	Lot 5, Block 2, Corbit's 1st Addition, Negaunee	Purchased
2293	N $\frac{1}{2}$ & SE $\frac{1}{4}$, Section 22, 48-28	Declined
2294	Molybdenum & Silver in Ontario, Canada	"
2295	NW $\frac{1}{4}$, Section 7, 57-20, St. Louis County, Minn.	"
2296	NE $\frac{1}{4}$ -SW $\frac{1}{4}$, Section 24, 43-35, Iron County, Mich.	Purchased
2297	Iron ore lands in St. Lawrence County, New York	Declined
2298	Lot 7, Block 15, Pioneer Iron Co. Plat, Negaunee	"
2299	Greenway Mine, Itasca County, Mesaba Range	"
2300	Iron ore in Hinck's Township, Quebec, Canada	"
2301	Same as Offer No. 2280 above	"
2302	W $\frac{1}{2}$ Lot 36, Block 5, Jackson Iron Co. Addition, Negaunee	"
2303	Lot 1, Block 4, Pioneer Iron Co. Plat, Negaunee	"
2304	Lots 1, 2, 3 & 4, Block 15, Pioneer Iron Co. Plat, Negaunee	"
2305	Lot 1, Block 4, Jackson Iron Co. Addition	"
2306	Various descriptions in Sections 7 & 8, 131-29, Minnesota	"
2307	Various descriptions in Dickinson County, Michigan	"
2308	NE $\frac{1}{4}$ -NE $\frac{1}{4}$, Section 4, 58-17, Sullivan Mine, Mesaba Range	"
2309	Iron and manganese lands in Tennessee	"
2310	Magnetite ore lands in Essex and St. Lawrence Counties, N. Y.	"
2311	Iron ore lands on Black Island in Lake Winnipeg, Canada	"
2312	Various descriptions in Sections 22, 27 & 34, 48-19, Michigan	"
2313	Belmont Iron Mine, Lot 19, Concession 1, Ontario, Canada	"
2314	Lot 6, Block 23, Pioneer Iron Co. Plat, Negaunee	"
2315	Various descriptions in 45-24 and 45-25, Gwinn District	Pending
2316	Eighty acres along Escanaba river near "White City Falls"	Declined
2317	Magnetite deposit on Central Iron Range, Ontario, Canada	Pending
2318	Three hundred acres of iron ore lands in Virginia	"

I. RESEARCH & EXPERIMENTS.

Test Laboratory:-

The new Test Laboratory, erected near the Holman-Cliffs mine office at Taconite, Minnesota, by the Mesaba-Cliffs Mining Co., was placed in regular operation late in the Summer. It is under the direct supervision of George H. Beasley.

This laboratory is equipped with the very latest types of both common and especially designed testing machines and devices known to the iron ore field, and of such size that relatively large scale samples can be treated. The results on such samples should be comparable to commercial applications. Complete mill flow-sheets can be set up in the laboratory and operated mechanically, comparable with a full size plant.

In addition, the laboratory is equipped to take care of the classification and test work on all drill hole samples. Chemical analyses, however, are made at the district chemical laboratory located near the Hill-Trumbull washing plant, at Calumet, Minnesota.

Selective Media Concentration:-

A commercial size Selective Media Concentrator, - the first such machine ever built, - was placed in test operation in the Heavy Density plant at the Hill-Trumbull mill. It started about July 1st and continued throughout the balance of the season.

This concentrator was designed and built by the Stearns-Roger Manufacturing Co. of Denver, Colorado. It was operated at their expense and by their own personnel. It combines two physical principles in its operation, - namely, centrifugal force and specific gravity. It was designed primarily to treat crude iron ore in sizes smaller than that treated by the heavy density cone, - in other words, the material which we have been treating in Akins classifiers by the so-called Double Classification process. The latter hasn't proven entirely satisfactory so far.

The Selective Media machine was placed in the plant so that it handled one-half of the Double Classifier feed while the other half went through the Double Classifiers. In this way, a good comparison of the results from each process should have been possible. As a matter of fact, however, considerable difficulty was experienced in splitting the feed so that the analysis of the material treated by the each process was approximately the same. However, the results were good enough to convince us that the Selective Media Concentrator is superior, in several respects, to the Double Classification process and will produce a higher grade concentrate at a lower cost.

On the basis of these tests, this Concentrator will be strengthened in one or two weak points, and a second unit added, to take care of all the fine ore feed at the Hill-Trumbull Heavy Density plant during the coming operating season. Furthermore, two machines will be placed in the Canisteo mill in place of one-half the fine ore treatment capacity at that plant.

Cone Plant Operation:-

During the 1944 operation of the Cone department of the Heavy Density plant at the Hill-Trumbull mill, a material saving in medium cost was effected by mixing specially prepared magnetite with the ferro-silicon used as the heavy density medium. It was found that as much as 32.7% of the mixture as magnetite yielded a medium with a gravity sufficient for the type of ore being fed to the cone. With the cost of magnetite at \$0.0132 per pound, compared with \$0.0468 for ferro-silicon, the total saving from July 1st, when mixing was started, to the end of the season, amounted to \$1,253.24.

Hydrotator and Hydrosizer:-

The Hydrotator made by the Roberts and Schaefer Co., and the Hydrosizer made by the Dorr Company, - both of Chicago, are to be tested, in parallel, at the Holman-Cliffs washing plant during the coming season. Although they are very different in design and operation, both machines operate on the specific gravity principle and are designed to treat only fine ores. They will treat the overflow from the Akin classifiers which ordinarily is wasted in the tailings basin. It is this same class of material on which commercial scale tests are being conducted by flotation at the Canisteo washing plant.

Oil Flotation Tests:-

A pilot plant, using oil flotation, was erected alongside of and adjacent to the Canisteo washing plant, by the Minerals Separation North American Corporation of New York City. The plant went into full scale operation after the middle of the season. The flow-sheet was designed to test iron recovery in the fine tailings from the washing plant, but only after intensive research was made by the Minerals Separation staff in a laboratory located at Hibbing. This latter work was started late in 1942 and has continued since then.

Minerals Separation has made laboratory tests on the fine tailings from numerous washing plants along the West portion of the Mesaba Range. They find this material fairly uniform, both in size and in iron content. It is all minus 35 mesh, contains about 10% plus 100 mesh, and about 60% minus 325 mesh. It contains about 21% iron, on the average, although occasionally it will run as low as 10% Fe and as high as 30% Fe. The advantages in using this material for testing flotation, in saving iron, may be tabulated as follows:

1. Its size already is closest to the range treatable by flotation.
2. It is readily available in large tonnages in numerous tailings dumps.
3. No mining is necessary prior to treatment.

In making the separation, between quartz and the iron mineral, the quartz is floated and the iron mineral depressed. Three primary reagents are used to effect the separation, namely: starch, lime and an organic material,

technically known as fatty or resin acids and their soaps.

The function of the starch is to coat the iron mineral and prevent the organic "collector" from becoming attached. Thus the iron mineral cannot adhere to the air bubbles and is said to be "depressed". Starch, therefore, functions as a depressant. The function of the lime is to coat the quartz mineral and this coating causes the organic "collector" to become attached to the quartz. When this attachment takes place, the quartz is in condition to adhere to the air bubbles. Lime is said to be an "activator" of the quartz.

The pilot plant work, in the limited operation last season, has led to no definite conclusions and yielded very little information except that a thickener is needed in the flow-sheet circuit. With this addition, and after a full season's operation in 1945, the staff feels sure it will find out exactly what this process can do and how it will fit into iron ore metallurgy.

J. - EXPENSE STATEMENTS.

Tables VII and VIII which follow, show a detailed statement of charges to Geological Expense for the year 1944, and a comparative statement of these charges for the last three years. They are self-explanatory.

TABLE VII

STATEMENT OF CHARGES TO GEOLOGICAL EXPENSE FOR THE YEAR 1944

Salaries	\$ 18,656.90
Travel and Entertainment	4,444.20
Operating Automobiles	974.39
Supplies and Office Expense	3,040.92
Personal Injury	-
Unemployment Insurance Tax	178.75
Old Age Benefit Tax	137.49
Unclassified	671.43
TOTAL	\$ 28,104.08

TABLE VIII

COMPARATIVE STATEMENT OF CHARGES TO GEOLOGICAL DEPARTMENT
FOR LAST THREE YEARS

	<u>1944</u>	<u>1943</u>	<u>1942</u>
Salaries	\$ 18,656.90	\$ 16,089.88	\$ 14,212.05
Travel and Entertainment	4,444.20	3,740.22	2,448.74
Operating Automobiles	974.39	993.95	980.24
Supplies and Office Expense	3,040.92	2,884.98	1,537.17
Personal Injury	-	2.00	2.00
Unemployment Insurance Tax	178.75	140.21	153.11
Old Age Benefit Tax	137.49	112.46	95.68
Unclassified	671.43	375.05	113.06
TOTALS	\$ 28,104.08	\$ 24,338.75	\$ 19,542.05

Respectfully submitted,

E. L. Derby, Jr.

Geologist

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4/6/45

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