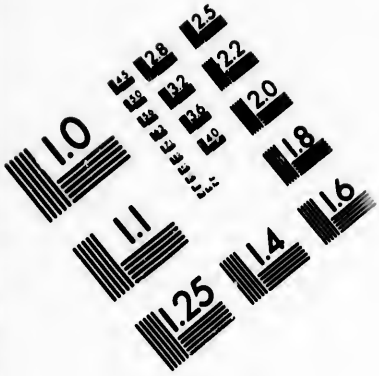


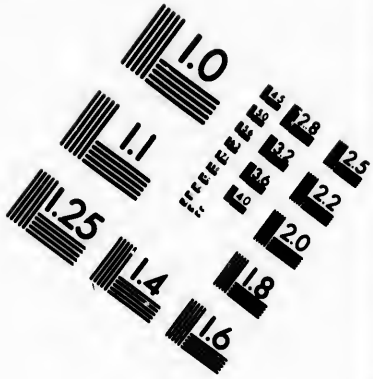
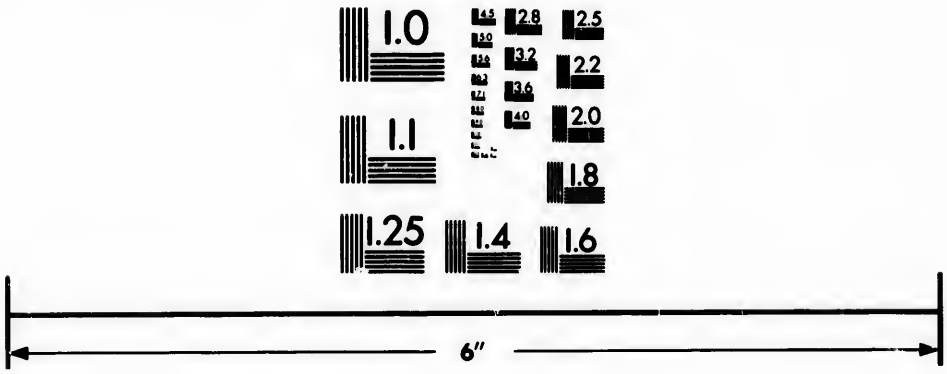
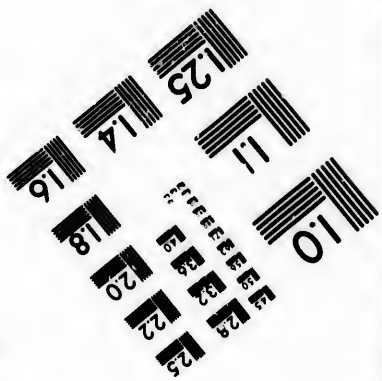


IMAGE EVALUATION TEST TARGET (MT-3)





Photographic Sciences Corporation

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

- [x] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [x] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [ ] Bound with other material/ Relié avec d'autres documents
- [ ] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distortion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- [ ] Additional comments:/ Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- [ ] Coloured pages/ Pages de couleur
- [ ] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [ ] Quality of print varies/ Qualité inégale de l'impression
- [ ] Includes supplementary material/ Comprend du matériel supplémentaire
- [ ] Only edition available/ Seule édition disponible
- [ ] Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/ Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
							✓				


IRON RANGE
IRON MOUNTAIN
NORWAY
CRYSTAL FALLS
FLORENCE
IRON RIVER
TOTAL OUTPUT OF IRON ORE 13,000,000 TONS.
ANNUAL CUT OF LOGS AND LUMBER 600,000,000 FEET.
BY
Walter
R. Nursey.

"The Menominee Iron Range."

From its Genesis to its Revelation.

"* * * * A land whose stones are Iron, and out of whose hills thou mayest dig Brass."

—*The Book of Deuteronomy.*

Swain & Tate Co., Printers, Milwaukee.

A BUSINESS INVITATION TO THE MENOMINEE IRON RANGE

Addressed to You,

FROM THE LUMBERMAN AND THE MINER.

"Say, Partner! Won't you come over and 'chip in?'"

The Menominee Iron Range.

ITS CITIES:

THEIR INDUSTRIES AND RESOURCES.

BEING A SKETCH OF THE DISCOVERY AND DEVELOPMENT OF THE

Great Iron Ore Beds of the North,

SITUATED WITHIN PORTIONS OF THE STATES OF

MICHIGAN AND WISCONSIN, SOUTH OF LAKE SUPERIOR.

SUBMITTED AS A HAND-BOOK FOR THE INFORMATION OF THOSE SEEKING A PROFITABLE FIELD FOR LABOR AND INVESTMENT,

BY

Walter R. Nursey,

Author of "Ten Years in Winnipeg," "Keewatin, the Debatable Land," "Escanaba, the Iron Port of the World," etc., etc.

With Maps and Illustrations.

TABLE OF CONTENTS.

Illustrations.

ALL of the artistic Half Tone Plates and Photo-Engravings which embellish this publication, have been engraved by the Marr & Richards Engraving Co. of Milwaukee, from photographs taken especially for the purpose. To Mr. Hadley of the Thomson-Van Depoele Electric Mining Co. of Boston, I am indebted for the underground flash light views.

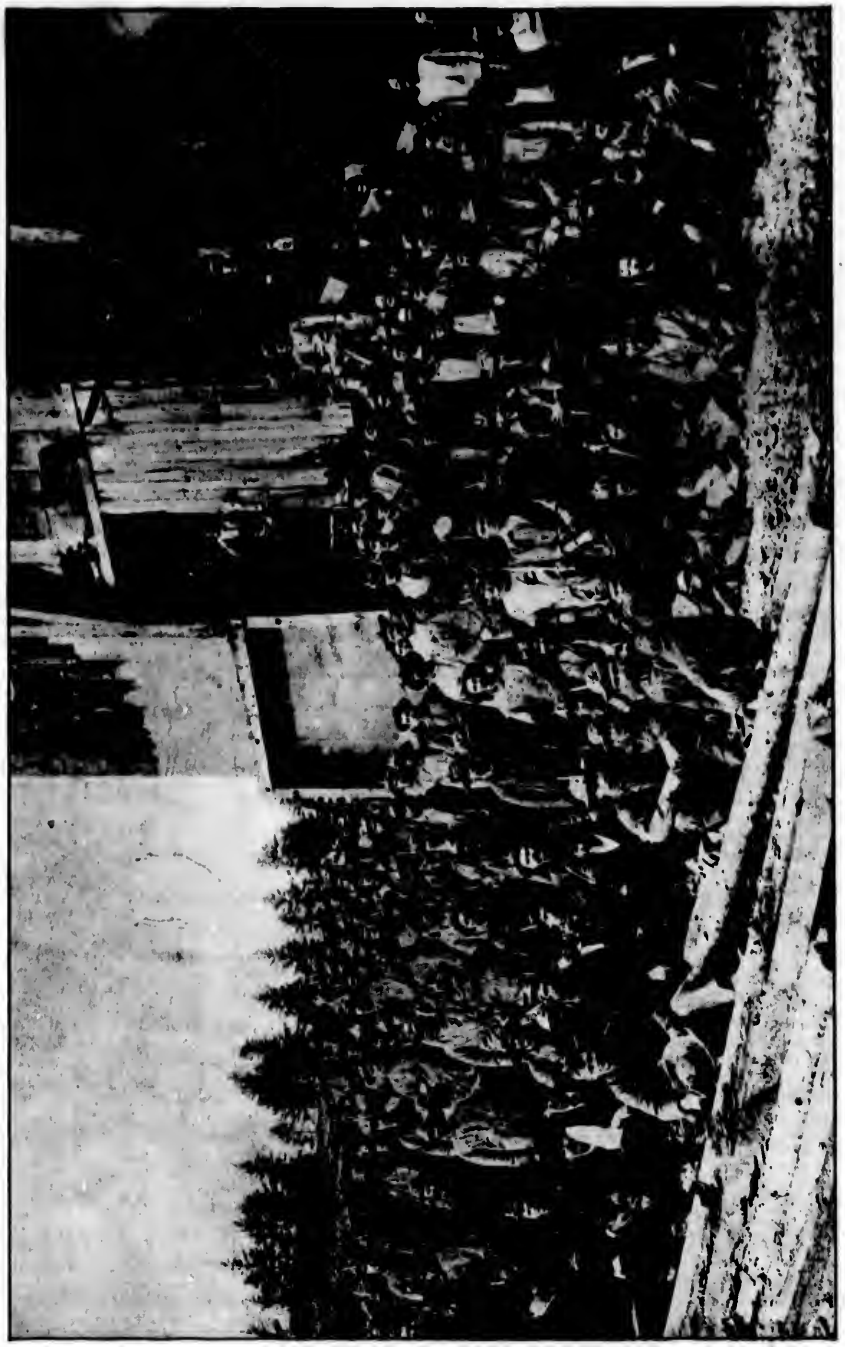
For the typographical merits of the pamphlet, Swain & Tate Co. also of Milwaukee are capably responsible.

The Map of the range which was compiled with special regard to the references I have made to local geography, is the work of Mr. Dunbar Scott of the Millie Mining Co., Iron Mountain.

As to my estimate of the kindness of the quintette of ladies who permitted me to perpetuate their portraits in print, I find it quite impossible to express my appreciation in cold type. My desire to place in evidence that iron was not the only natural attraction native to the Menominee, is, I am now certain, distinctly demonstrated in the more magnetic allurements presented by these feminine symbols of its Northern Lights.

SUBJECT	PHOTOGRAPHER.
River-man and Miner	By Murdoch & Mortensen.
Shaft No. 1, Hamilton Mine—Group of Officials and Miners,	By Murdoch & Mortensen.
Miss Della Felch.	By Lee.
Shaft, Chapin Mine, 1878	Old Photo, Mr. Hambly.
Initial Letter	
Paper Mill, Lower Quinnesec Falls	By Mortensen.
Log Jam on Paint River	
Birds-eye view of Iron Mountain	By Mortensen.
Dr. Nelson P. Hulst	By Stein.
Hon. Jno. L. Buell	By Mortensen.
Vulcan Hotel	By Miller.
Mr. Lew Whitehead	By Bordewick.
Timber Shaft, Chapin Mine—Group of Miners	By Brown.
Miners Hand Drilling, H. Shields and J. D. Cudlip	By Murdoch.
Miners in Cage—Descending Pewabic Mine	By Mortensen.
Rand Air Drill, 4th Level, Ludington Mine—Capt. Davis, Engineer McDermott, etc	By Mr. Hadley.
A Menominee Ore Carrier, The E. C. Pope Through courtesy of Cleveland *Marine Review*.	
Birds-eye view of Norway	By Bordewick.
"Current Block," Norway	By Bordewick.
West Vulcan and Currie Mines, Penn Mining Co.	By Bordewick.
Shaft House 2, Aragon Mine, Group of Officials and Miners	By Bordewick.
Street View, Norway	By Bordewick.
Mr. J. B. Knight	By Bordewick.
Rand Rock Drill, 12th Level, Hamilton Mine, Capt. Carbis and others	Mr. Hadley
Hauling Logs in the Winter	By Julin.
Birds-eye view, Iron Mountain	By Mortensen.
Chicago & Northwestern R'y Station,	By Mortensen.
Mr. John R. Wood	
Wood's Bank Block	By Mortensen.

SUBJECT.	PHOTOGRAPHER.
Chapin and Ludington Mine—Hydraulic Works and Air Compressors—Menominee River	By Mortensen.
Residence of Mr. Jno. T. Jones	By Murdoch.
Pumps at work, 13th Level, Hamilton Mine, Mr. Fesing, Capt. Carbis and others	Mr. Hadley.
Residence of Mr. E. F. Brown	By Murdoch.
High School, Iron Mountain,	Drawing by Architect Clancy.
Fisher Block, Iron Mountain,	Drawing by Architect Clancy.
Mr. Jno. T. Jones	
Wood's Sandstone Block, Iron Mountain	By Mortensen.
Court House and Jail, Florence	By Julin.
Mr. H. D. Fisher	By Armstrong.
Wisconsin Saw Logs—A big haul	By Murdoch.
Mr. Chas. Loughrey	By Julin.
Public School, Florence	By Julin.
Dr. Cook's Camp, Brule River	By Julin.
The Mansfield Mine, Crystal Falls	By McCourt.
Mr. John Parkes, Crystal Falls	By McCourt.
Court House, Crystal Falls	By McCourt.
Paint River Falls and Water Power, Crystal Falls	By McCourt.
Mr. A. Lustfield, Crystal Falls	By Brush.
Lockwood House, Crystal Falls	By McCourt.
Public School, Crystal Falls	By McCourt.
The Dunn Mine, Crystal Falls	By McCourt.
Mr. Harte's Residence, Crystal Falls	By McCourt.
Mr. Lustfield's Store, Crystal Falls	By McConrt.
Trout Fishing on the Brule, Iron River	
Ore Chute and Tram Car, 13th Level, Hamilton Mine	Mr. Hadley.
A Menominee Belle, Miss McKinstry	By Mortensen.
The Chimes of the Menominee—Mrs. Claude Atkinson, Miss M. Bush and Miss Kitty McConnell,	By McCourt, Bordewick and Mortensen.



SHAFT NO. 1.—HAMILTON MINE, IRON MOUNTAIN. GROUP OF OFFICIALS AND MINERS.

Shaft No. 1.—Hamilton Mine, Iron Mountain. Group of Officials and Miners.

Preface.

THE facts recorded in this monograph, other than those facts acquired by a study of available statistics, if not actually won at the mouth of a derringer, have yet been extracted, with few exceptions, from very unwilling witnesses.

The dilemma which confronted me in my task, can be fairly well appreciated when it is understood that out of over sixteen hundred circulars of exhortation, addressed to all sorts and conditions of men, less than a dozen gentlemen respected the invitation. Sixteen hundred recipients "failed to connect." For obvious reasons this inexplicable apathy is to be regretted, and is mentioned more with the purpose on the part of the writer, of insisting upon plenary absolution at the hands of locally interested critics, for with a view to fortifying his position against comment on any sins of omission, a saving clause was inserted in the introductory prospectus, which read as follows:

> To place all matters of alleged fact in connection with the range, beyond the pale of doubt, your written opinion, based upon an actual knowledge of the subjects referred to, is urgently sought. If you do not care to accept your share of this reasonable responsibility, any criticism you may feel constrained to make after publication, will fail to indicate that you "were really interested in the reliability of the work."

To those few who realized the importance of disseminating literal literature, concerning a territory destined to furnish and to forge the king-bolts of America's commercial world, and with whom a sense of universal duty prevailed over other considerations, I proffer my thanks.

To Dr. N. P. Hulst, of Milwaukee, Gen. Man. Pewabic Mine; Mr. John T. Jones, Supt. of Hamilton Ore Co.; Mr. J. B. Knight, Editor of Norway *Current;* Mr. Kelly, Gen. Man. Penn. Mining Co.; Mr. John R. Wood, Pres. First National Bank, Iron Mountain; Rev. Father Bourion, Mr. H. D. Fisher and Mr. Frank Waring, of Florence, Mr. A. Lustfield and Mr. Gerome Schwartz, of Crystal Falls, and Mr. Lew Whitehead, of Vulcan, and to Major S. G. Brock, Chief of Bureau of Statistics Treasury Dept., and Dr. David T. Day, of the Division of Mines, Washington, my acknowledgments for valuable information are especially owing. To some other gentlemen I am also under obligations to a lesser degree. As to the contingent of chronic promisors, whose profuse pledges remain unfulfilled I commend them to the consideration of my successors. To those who were always too busy ("Don't you see Sir, that I am too busy?") to talk business, or even to be approached, and an interruption of whose child-like reveries, would,

were the dreamers to be believed, disturb the balance of the world, I extend my apology and make natural allowance. To those other few, equally estimable yet more refreshingly frank and understandable gentlemen, who referred to pits more bottomless than euphonious, where the earth forever melts in a fervent heat, and spoke of an overture of clubs, I would merely remind them, that in the advanced prosperity which must follow a wider knowledge of the native riches on which the very thresholds of their houses rest, though they will share in all the benefits that will follow such publicity they can never hope to claim the smallest particle of credit.

It is particularly trusted that the mission of these unpretentious pages or their proper status in the world of books, will not be confounded. In no sense are they hazarded as a literary effort, or with the presumption that they will rank with any of the more elaborate and recognized chronicles of Michigan's achievements. A great dearth of literature descriptive of the famous local resources of these portions of the states dedicated to the "beaver" and the "wolverine," exists. It was deemed that any addition to such scant records no matter how immature the style, provided unassailable facts were presented, should be of practical avail in spreading the knowledge of the wonders of marvellous Menominee, and so be acceptable to a public forever thirsting for information.

I am aware that publications of this nature are prone to carry greater respect if they are free from any indication of being issued as a business venture. Again, on the other hand, if issued under the auspices of local interests they are probably more apt to present colored and partial views, the result of a not unnatural desire to place everything in the best possible light. I therefore submit that in the plan now pursued, namely a review by an impartial observer, the naked truths are more liable to be presented than they would be by any of the ordinary methods universally in vogue. The writer being distinctly free from provincial prejudice and completely independent of control, the statements hereinafter made may be accepted as reliable. Whilst exception may be taken to certain conclusions reached, involving a difference of opinion only, no exception need be taken to the *facts* as recited which in every case have been subjected to all possible verification.

Profound belief in Menominee's future, a belief encouraged by the staunch advocacy of practical representatives of the Range, must stand the excuse for the existence of this epitome of truths now presented. The pith of the rangeman's creed—which forms the excuse for my research, and the scope of my enquiry—is best explained by a quotation from the prospectus already mentioned, and which preceeded my investigations, and the compiling of this pamphlet.

Distinctly foremost as a controlling factor in the expansion of trade and the enlistment of capital, is the unstinted publicity of facts relating to the physical aspect and commercial situation of any region, which aspires to compete in the world's race for supremacy in any special line of product or manufacture.

The people of the Northern Peninsula of Michigan and its parallell territory in Wisconsin, have been slow to adopt the pacific methods of modern trade warfare—the necessary outcome of commercial competition—which have been so successfully employed in the iron producing states of the South. Alabama, Virginia, the Carolinas and Tennessee in particular, have almost dried up the printers founts, and exhausted his fonts, in publishing to the outside world in attractive form the history of their resources, and have actually stormed the commercial strongholds of the North itself, hoping even to seduce the business men of the inland marine states from allegiance to their highlands of superior mineral and timber, for the doubtful advantages of the inferior iron fields of the over-heated South.

Not a southern city of the least magnitude—with less abundant advantages than have the majority of its prototypes in the North, or one whose town plat even exists only in the minds of the promoters—but has been written up, and its alleged resources advertised in an attractive way. Not a day passes but illustrated literature, preaching in glowing terms southern possibilities, reaches the northern manufacturer to disturb his peace of mind, or to induce the hesitating investor to concentrate his attentions on those somewhat torrid latitudes.

Whilst statements more or less exaggerated are thus placed in circulation, the fact must not be lost sight of, that the South if producing a much less valuable grade of ore than the Lake Superior region, holds out some cogent reasons for recognition, in the way of low freight rates and less exacting royalties.

The vastness of the Menominee Mines, the unapproachable excellence of their ores, the dense forests of pine and hardwood, with an unlimited supply of structural timber, pulp wood, lumber, charcoal and other fuels, offering material for every known branch of manufacture, together with the inestimable value of the many river's enormous water power, whilst all contributing to make a region incalculably rich in natural resource—have never been presented to an inquisitive public in condensed book form.

It is in a measure to present a counter-irritant to this southern fever, that I invite a closer study of the great trade possibilities of the Iron ranges of the Menominee, which may righteously be regarded as perhaps the richest region of ferriferous deposit in the known world.

A region, upon the churned bosom of whose restless parent stream annually float some 600,000,000 feet of logs cut within its limits, can surely be excused for courting public criticism.

What are these rivers saying? What is the burden of their invitation? What is the practical interpretation of the music of their ripple, and of the psalm of their cataracts? Listen! it is this:

> "We are dying to be harnessed in the interests of commerce. We are eter-
> "nally and aimlessly beating against the rocks. Won't *you* come, man of indus-
> "trial science and lead us the way we would go? At six points alone, alongside
> "flourishing towns, we offer you our free services equal to twenty thousand horse
> "power. It is yours for the asking. Won't you come?"

These streams offer every trade inducement in the way of cheap and applicable co-operation to the men who seek new fields for manufacturing industries. The raw material, the wood and the iron, are at hand in plethoric abundance. The market is both local and territorial, the demand is daily increasing, but the supply at present comes from abroad. The forests of the Menominee butter the bread of the eastern manufacturer, who grows rich on their crude product. The Iron Mountain consumer, after paying two freights on his manufactured necessaries of life, besides commissions to various middle-men, realizes in common with his neighbors in other towns of the range, that it is about time he disbursed his wages nearer home, and in supporting local industries, indirectly benefited himself.

An Iron Range such as the Menominee, with a list of thirty-two mines, only twelve of which however, produced during the last calendar year over 20,000 tons of ore each, and only six of which produced over 100,000 tons each, whilst the total output of fourteen others only reached 96,000 tons, yet managed, with this majority of infant industries to ship 2,282,237 tons of hematite to eastern smelters, being considerably less than one-sixth only of the total product of the United States, and greatly less than one-third only of all the ore mined in Michigan—has surely the vested right by reason of native endowment to demand and exact the attention of the world.

North and west of the Menominee Range, inclusive also of all Michigan and Wisconsin, I find by a study of the last Census Report (Bulletin No. 12) that there is a population of over 8,000,000 of people in the States and Territories marketably tributary to the Lake Superior Iron fields. Accepting the estimate of 300 pounds per capita as the present consumption of iron in the United States, I find that about 1,250,000 tons of iron would at the present time be annually necessary for the immediate wants of these people. Hence it would take to-day more than 200,000 tons of ore in excess of the Menominee Range product of 1890, to supply the existing want of the consumers geographically and commercially dependent on an iron mart yet to be established in the bulls eye of the greatest ore-beds of the world, and this without any regard to an increase of population or the accelerating demand of the future.

The chief portion of this hand book is justly devoted to a resume of the physical features, resources and industrial advantages of the Range, as a whole—as the situs of the iron fields which will within the century supply the entire Northwestern States—which resume forms the comprehensive text and key to the special advantages presented by each of the towns and villages within its borders. The limited space at my disposal permits but the veriest outline sketch of their several histories, and is entirely too restricted for the purposes of detailed chronology. Their separate mention indeed is more for the purpose of illustrating the inherent and extraordinary worth of the country subject to their control, an authority imposed upon them by the rapid expansion of their governmental functions, and of the industries upon which they are built, and which has forced them into existence within a decade.

A short ten years since the oldest child of this urban family was the crudest kind of a mining village, canvas-housed, board-shacked, and log-cabinned, sheltering one hundred or less swart miners of divers nationalities under the sombre arches of whispering pines. Could the few tall trees, relics of the original forest, which now in places cast their ornamental shadows on electric lamp posts and the pilasters of sandstone blocks, tell to you the story, they are never tired of whispering to each other, amid the showers of glistening needles, falling, falling, a sweet winding-sheet upon the graves of departed

facts, you would carry away with you a just impression—far outside of my power to impart—of the awful results—I use the adjective intentionally—of the subtle forces of nature. Out of chaos has arrived a new order of things. Out of tene[illegible]ous forest wrack, and silent hills of jasper, have sprung important towns vital with active commerce, and vibrant day and night with the aggressive shriek of steam, the blows of the pick, the muffled friction of the hoists, the sonorous roar of emptying skips, the crisp creak of electricity, and the high pitched singing of compressed air. Towns whose utilization of certain modern scientific appliances, surpasses in some particulars all other cities of the world; towns whose material advancement is literally based on the incalculable and inexhaustible value of the foundations of their streets, and whose adjacent barriers of marketable woods make even invasion profitable whilst it lasts, and conquest doubly so.

Few of the men who drifted into the wilderness of the range in the dying '70's dreamed of the revelations and successes which were to follow their primal exploits. American and Englishman, Italian and Frenchman, Swede and Belgian, Polak and Finlander, who followed in the blazed tracks of the early prospectors, realized even less than did the yet earlier French explorers, what mighty questions of commercial polity hung upon their efforts, whilst even their exploiting scientific precursors, who first damned their compasses for too faithful variations, and later woke the echoes of the iron cliffs of Waucedah, with their ultimate shouts of discovery, failed to comprehend in its entirety—as we also at this relatively late date do likewise—the significance attaching to the unlocking of the iron gates of the Menominee. To the men who first wrought and still labor in these "sunless caves," the thanks of the nation are due for their patient and insistent heroism. As for the discoverers, who through a war of conflicting rumors, in the face of great physical privation, and in the absence of all written reports, instituted a mineral inquisition, subpœnaed the testimony of the rocks, and compelled these highlands of diorite to disclose the dark secrets of the ages, does not their compensation exist in the betterment of their fortunes, and the record of their researches, more enduring even than the mineral their efforts brought to light.

This inland sea of metallic mountains, these pine-capped pyramids of Huronian rock, within whose subterranean terraces rest immense lenticular masses of hematite and magnetite of unsurpassed purity, remain to-day, practically speaking, a *terra* well nigh *incognita*. The richness of its deposits and the peculiar character of its geological conformation, renders its study and its scientific dissection an inviting field for the explorer and the capitalist. Leagues of ferruginous hills still sun their rust-red slopes undisturbed by diamond drill or giant powder. Of the millions of tons of ore in sight, they are, it is estimated, but an infinitesimal fraction of the vast body of 66 per cent. mineral, which underlies its eroded plane. Few days pass by, but new deposits are

announced in localities likely as not previously abandoned, whilst from less prospected places, news of fresh discoveries is constantly reaching the towns. To systematically explore the Menominee Range would occupy an army of experts until the crack of doom, Hitherto it has been but *scratched* at, an amount of work comparatively equivalent to that of a years labor by a lame chicken on a skating rink. That its thorough examination will be accomplished by the present generation, is an idea not to be entertained for a moment. That it offers extraordinary opportunities to the members of the industrial world is a self evident proposition.

The combination of circumstances—chiefly as a matter of fact, a combination of conflicting moneyed interests, effecting the producer of the ore, the shipper, and the utilizer of the crude manufacture, ably precipitated by "strikes"—which this current year has witnessed, culminating in a declining market for ore and a consequent decrease in the prophesied production of iron, is a result which has before to-day followed upon similar conditions. This temporary lull in the markets, however, carries no moral with it as far as the question of the world's accelerating demand for iron is concerned, it merely carries a warning to the trader to study more closely those principles of political economy which should govern his business. Iron is all right. It is the kings of finance who want regulating.

The per capita consumption of iron in the United States in 1889, calculated on a population of 64,000,000 was 300 pounds, or 8,500,000 tons in all. The product of the country for that year was 7,603,642 tons, a shortage in iron for our own wants of nearly one million tons. If the consumption of iron in the United States alone, continues to increase in the same relative ratio to its population, and in corresponding proportion to the per capita increase during the twelve years preceding 1889, then the home consumption of iron as estimated by leading statisticians and based upon the simple conditions governing similar forecasts made for previous periods—subsequently verified by facts—will be for the year 1900, instead of seven millions, over fourteen million tons, and these figures are reached without making any allowance for the growing and more general utilization of iron, or any regard for the inevitable development of demand. Were this feature taken into consideration—and surely with our knowledge of the new uses of iron in expanding areas of industry, it is imperatively permissible—fifteen to twenty per cent. might reasonably be added to the sum of this calculation. In order that you can get a good northwestern "cinch" on these figures, I will produce a key by which their reliability may be tested :

		INCREASE.
In 1856 the product of the United States in net tons was	883,137	
1867 " " " " " "	1,461,626	65 per cent.
1878 " " " " " "	2,577,361	76 "
1889 " " " " " "	8,516,068	238 "
1890 " " " " " "	10,307,028	21 "

In 1900 every known iron producing country of both hemispheres will be canvassed to supply the world's want of, say 50,000,000 tons. In 1889, the consumption of iron throughout the whole globe was placed, in round numbers, at 25,000,000 gross tons, this to meet the demands of 1,400,000,000, of population. If the increase in the consumed production of iron in the United States for the fiscal year of 1890 exceeded that of the preceding twelve months by 1,790,960 net tons, an increase of over 20 per cent., it is within quite reasonable bounds to admit the value of the previous statement. The inexhaustible fields of superlative ore which underlie the bold crags of the Menominee, will then be taxed to solve the earth's problem, and her hills will be vocal to the chorus of the pick. A Michigan peninsula which in 1890 produced 8,104,029 tons of iron ore, valued at $25,000,000, with eighty-two mines, some only partially developed, others only in the dawn of their development, should with increased facilities—the outcome of wisely invested capital—supply her quota of this compounding demand, a demand which allowing 10 per cent. per annum for ten years as additional to the present rate of consumption —the world over—would permit Menominee, if she held the same relative position to all other iron ore producing districts that she does to-day, to more than *double* her output, and this without taking into consideration the known diminishing production of iron stone in Great Britain and of certain other countries.

Neither is it only to assist her in the production of her ore, that the Menominee desires aid, but in the no less important matter of the conversion of the raw product into the crude, and the crude into the perfected article. The annual consumption of iron in the Northwestern States conveniently tributary to the Michigan and Wisconsin iron fields—and which later must be supplied direct from the points where the assembling of all the component articles is the cheapest—based upon a 300 per capita allowance for the population, should amount as previously shown to about 1,250,000 tons. Only 225,537 tons of this were produced in Michigan last year. How long is this condition of things going to continue. How long is the Northwest, with the continental centre of population yearly gravitating towards its higher latitudes, going to rest under the imposition of double freights on its raw exports, double in the sense that the "converted" material has to pay return freight, after its manipulation by eastern furnacemen. I submit full details on this question of freights vs. fuel, elsewhere. Even the "Solid" South with its inferior ores has to seek Michigan mines for its tithe of true mineral leaven, without which its lean products would be unmarketable for higher purposes. It is not proposed that old established industries should move north, their legitimate territory of occupation needs them, but it is urged that hesitating capital now at rest, should be induced to consider the business features of this presentment of facts, and thoroughly investigate the opportunities the Menominee offers before throwing out the industrial anchor elsewhere. And this whole subject must be regarded from the

broadest trade standpoint. It is no question of sectional enterprise. I submit it as a commercial peg of national import, upon which the first shrewd member of the congress of finance, who dares to enter this lobby which leads to the nation's strong-l x, can hang his Cardinals hat.

Where are the men who would reap the benefit of this certain development in trade?

* * * * * * * *

If I have aroused in you who read, the faintest interest in the "illimitable possibilities" of this northern heritage of metallic wealth, will you bear with me a bit further whilst I strive to convince you that I recite nothing but verities, as you follow me into * * * "a land whose stones are iron, and out of whose hills thou mayest dig brass."

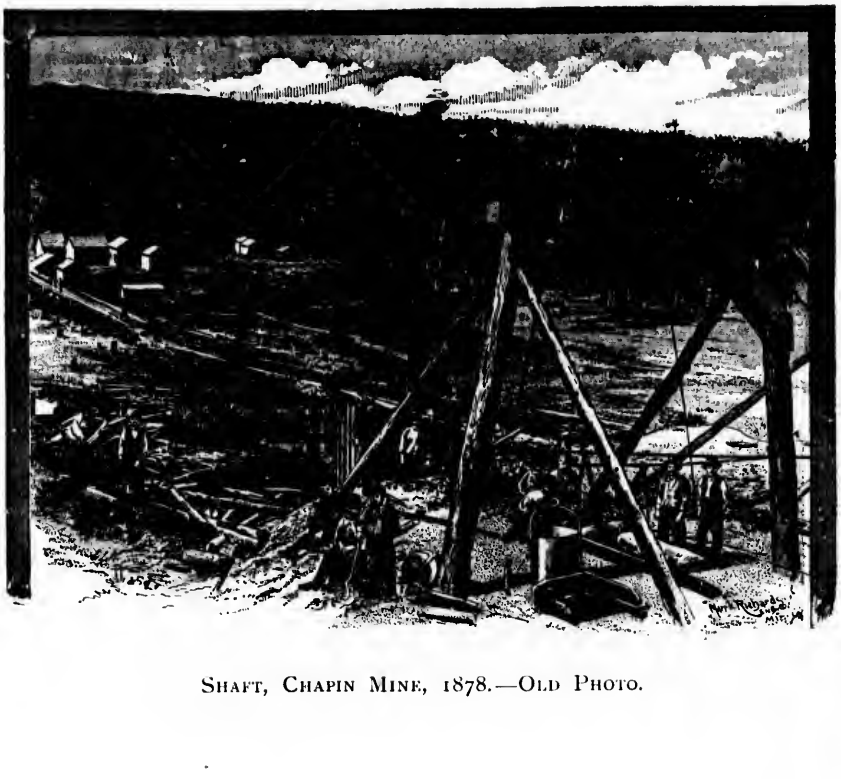
WALTER R. NURSEY.

IRON MOUNTAIN, Mich., Oct. 30, 1891.

"Don't you think you had better come?"

MINERS ENGAGED IN HAND DRILLING.

J. D. CUDLIP AND H. SHIELDS.



Shaft, Chapin Mine, 1878.—Old Photo.

CHAPTER I.

The Menominee River Country.

The Old and the New.

THUNDERING THROUGH miles of contracted courses, leap the turbulent waters of the Menominee. Leagues of confluent liquid highways swell this river's turgid volume.

Starting from the elevated divide which separates the balancing flood that seeks egress to Lake Superior, the Gulf of Mexico or Lake Michigan—the Hemlock river, the Paint, the Brule and the Michigammie in turn, unitedly pour the turmoil of their brown waters into its hungry lap. Through fastnesses of pine and hemlock, rock and ripple, an arboretum of forest incense, profitably capable of agricultural development, where it opens into savannah and bottom lands, full of mineral wealth and rich in marketable lumber, this river drains with its affluents an area of over 3000 square miles, and at last surrenders its secrets and its harvest into the broad bosom of majestic Michigan, three hundred meandering miles to the southward. Its waters have a history, and little wonder that the red bucks which haunt its trossachs grow fat and sweet as they champ its succulent vegetation. From the summit of the water shed on the line of the Marquette and Ontanagon railroad, 1186 feet above the mouth of the Menominee, steal the streams, that like silver tentacles embroider the woods, and discharge their boisterous babble into pine hemmed Michigamee lake 220 feet below the crest of the divide. This reservoir of many highland streams is, however, taxed beyond its capacity and discharges the bulk of its overflow

into one chief channel, which by devious ways, and receiving much encouragement from many wayward brooks in the wilderness, conducts the same named water southward to the Brule, when uniting forces, and with joint tributaries, they continue the noisy race over one right of way until later as they realize their associated importance, and become indiscreetly turbulent, they receive a check by nature, tumble headlong over a granite bench, and irretrievably mixed, undergo fresh baptism at the hands of the hydrographer and henceforth under the married name of Menominee hurry seaward, finally washing the golden beaches, or expending their wedded strength on the resonant cliffs of Lake Michigan.

To get thus far it has had to pass over ledges of titanic granite or through scarped gulches less adamantine, bored out by the persistent efforts of accumulated eras. Under the sombre shades of forest arches, the home of the predatory wolverine—I refer to the animal, not the statesman—by lawns of bright beaver meadow or through treacherous muskeg, through a country pregnant with pronounced geological contradictions, which disturb the scientist and confound the explorer, its waters wend their obstructed way, and after a succession of endeavors through compressed channels, bearing with it its song of conquest, it penetrates the rim of the wilderness, drowns all opposing barriers in a drench of white foam, and in a series of cataracts, which stand like pillars of alabaster carved out of the green thicket, each one of which exceeds its predecessor in savage beauty, it reaches its downfall, and rests from endeavor as it tells the story of its wonders to the listening slopes of pastoral Green Bay.

The Menominee Range of to-day, that is the iron producing district which bears its name, is practically embraced in the belt of country, which with a varying width of from twelve to twenty-five miles, has its southeastern boundary in township 39 north, range 27 west, and its northwestern boundary at township 43 north, range 35 west. Both of these points are in Michigan. Its course, however, runs through a portion of Florence county, Wisconsin, south of the rivers Menominee and Brule, which successively form, as far as the range is concerned, the dividing line between the two interested states. Reference to the map which faces this chapter, will make all matters of local and territorial geography clear, and give a correct idea of the erratic distribution of its riparian features.

The first mention of the discovery of iron ore in America is credited to Thomas Harriott, the geographer of the second expedition to Virginia, in 1585, and the first shipment of ore followed twelve years later, when on April 10, 1608, the colony at Jamestown despatched a cargo to England from which seventeen tons of iron were made and sold to the old East India Company at twenty dollars a ton. Upon the attempt of these same civilizers to construct furnaces, or rather works, in 1622, at Falling Creek sixty-six miles above Jamestown, members of an opposing cult amongst the resident red men there, despatched 347 of their number. In 1844 Michigan undertook to disclose the fact that she could emulate the "land of cotton," for that year Mr. Burts party of surveyors who were at work in the vicinity of the present town site of Negaunee, discovered through the coquetry of their compasses the existence of the king of metals, and more than verified the discoveries of Dr. Houghton in 1840, who had then declared—his energies however being doubtless all directed towards the solution of the copper question—that though hematite ore was abundantly disseminated

"through all the rocks of the metamorphic group, it did not appear in sufficient "quantity at any one point that had been examined to be of practical importance." According to Major T. B. Brooks, (Geological survey of Michigan 1873) Mr. W. A. Burt, then United States Deputy Surveyor, was engaged in establishing township lines, and making geological observations, and on the nineteenth of September while running the east line of township 47 north, range 27 west, he observed by means of the solar compass "remarkable variations in the direction of the needle, amounting to 87 degrees from the normal." Thus was officially established the existence of iron ore in the Upper Peninsula. If doubt remained, it was removed two years afterwards, for in 1846 F. W. Kirtland, E. S. Rockwell, W. H. Munroe, and T. B. Brooks, members of the "Jackson Co.," which had purchased a mineral location on Teal Lake at $2.50 per acre, returned from the mouth of the Carp river with 300 pounds of ore on their backs, which in August of the same year, was converted at the bog ore forge of Mr. Olds at Cocoosh prairie into the first bar of iron ever made from Michigan ore. In 1850, Mr. Crawford of the Sharon Iron Works at Newcastle, Penn., shipped five tons of ore, which was made into blooms and rolled into bar iron at that place. The product was found to be excellent. In 1852, seventy tons were taken to Sharon in the same state, and converted into pig, but it was not, however, until 1856 out of the 6790 tons produced in the entire peninsula, that the first regular shipments of ore commenced, and which amounted during that season to about 5000 tons. The superlative quality of Lake Superior ore, exacted from thence onward the foremost industrial attention.

In 1840, Dr. Douglas Houghton, the earliest state geologist, wrote the Hon. A. Porter that "ores of zinc, *iron* and manganese occurred in the vicinity of the south "shore of Lake Superior, but doubted whether either of these, unless it were zinc and "iron, was in sufficient abundance to prove of importance." It is therefore probable to quote Major Brooks, "that up to that date no Indian traditions worthy of credence, "in regard to large deposits of iron ore, had come to his knowledge."

Thus was the first shot fired that announced the peninsula reign of hematite, and later urged into a confession of complicity, the adjacent Menominee, which not even the prostration of the iron industry through the great panic of 1873 was sufficient to retard. Though the maxim which declares that "out of seeming evil is often educed good," may be somewhat trite, it is none the less correct, for it was out of the financial troubles of 1843 of the State of Michigan—the result of the "five million loan"—that the interrupted researches of Dr. Houghton, which led to the discoveries as related, were re-instituted partly through federal assistance.

Meanwhile the blue bastions of the Menominee slept, but continued to increase with their tears the red furrows which scarred their sides, and which ultimately helped to reveal the wonders they for so long had scrupulously concealed. How long had these silent hills lain dormant? How long in stern submission to the inexorable command of their creator had they mutely bowed with unyielding patience to the divine will? Aye! how long! Let us unfold the turned down pages of the book of time and scan for a moment the records of the ages.

Without attempting a comparative anatomy of the first books of the Pentateuch, with the calculations and deductions of more profane writers, it is sufficient for our purpose to remember that there was a period of remotest antiquity when this sphere was

in a state of appalling elementary confusion. The elements were at universal war. Earth, air, fire and water struggled for mastery. Columns of opaque steam, and a pall of cimmerian smoke, doubtless surrounded the globe which by the possible astronomers in the neighboring planets, must have been regarded with dire alarm. This surging sea of mud charged with inconceivable gases, became a celestial St. Catherine's wheel, whose fiery spouts are still apparent in smothered volcanoes. Now heaving, now subsiding, rock and water fought for supremacy, and finally, not without long continued strife, compromised matters, by a process of allotment. This heated controversy was allowed to cool by mutual consent, though the result was not an equal division of the spoils, for whilst *terra firma* secured a somewhat divided one-fourth interest in the

PAPER MILL, LOWER QUINNESEC FALLS.

terrestrial deal, the waters pre-empted the entire remainder, nearly 140,000,000 square miles. Neither indeed were these agrarian rights secured at the first, for the mountain chains which to-day wrinkle the face of the land, and those other elevated plateaus, which give scenic charm to the world's surface, have as a matter of fact been stolen from the depths, the outcome of a triple alliance between earth, air and fire, and which is evidenced to this day in the assuaging of even the very ocean in places, the upheaval of mountains and the formation of islands. This division after all is not so unequal an one as it seems to be. A few years since the earth was computed to weigh 5852 trillions of tons. The density of the earth is nearly six times that of water. Allowing for wear and tear this seems then to fairly balance the property partition. In accordance with this post-diluvian agreement, the organic substances composing the earth were permitted slowly to mature, though this structural process was of gradual formation. Continents emerged from the bosom of the deep, and vegetable and mineral creations succeeded

each other during the untold ages which followed. For a while icebergs and glaciers traversed the lowlands at their own sweet will, bearing on their brittle laps, specimens of geology from older or newer lands, which with no other possible object in view than to puzzle the scientist, they permitted to slide at reckless random into the shallow seas of ooze, or left basking on the split ramparts of eternal hills a thousand leagues away. And so the accumulated sediments of the ocean in turn became the metal-bearing rocks of northern Michigan. This was not accomplished, however, without vigorous protest, and was doubtless long subsequent to the period, when cycles of years previously a vast pond of sullen water submerged this north land, when under the gray light which brooded on the deep, mariners of a lost race tried for soundings in the basin of the Menominee.

Of the great geological ages, the mesozoic, which followed the carboniferous era, is the period which left a greater legacy of mineral wealth than any other. This was followed by the tertiary epoch, remarkable for its development in the animal and vegetable world. Gigantic mastodons ranged through forests of timber, not rivalled even by the giants of the Yosemite. To this reign of rank abundance, succeeded the nipping centuries of the glacial dynasty, whose duration no man knows. For untold time the earth lay dead, not dormant, under a cerement of ice 5000 feet in depth, which precluded the possibility of life of any description. Snow whiter than porphyry mantled the universe, and audible silence wrapped the ghost-like mountains. The earth revolved and sped through space, a gleaming and gigantic snowball. The longest spell of frost on record; no January thaw. Indeed I believe there was no suspicion of a thaw for over 2,000 years. Tobogganing was in favor, and snow shoes at a premium. It is the earlier zoic period however, in which we are interested, for about that time the iron industry as you may say, was first established by the torrents of hot steam, and rivers of molten rock, which converted the interior of the earth into furnace and crucible at one and the same time. And so these subterranean fires remained banked though in full operation; but, boiling over, the forces of this terrible gallipot blew into fragments the confining crust, and later created with its upheaval the iron ranges of Superior.

In the written "Relations" of the Jesuit Fathers, who were the first missionaries to spread the evangel of the white man amongst the red skinned pagans of old North America, and which writings cover a period extending from the year 1632 to 1672, frequent allusion is made to the existence of economic minerals in the region whose coast is swept by the tempestuous billows of mighty Lac des Illinois. Indeed the fact that copper existed on the pictured coast of south Superior, was published to the outside world in 1636 through a book written by La Garde and printed in Paris. In 1640 Pierre Boucher published at the same capital, a small work on the Lake Superior mines. Whilst too much credit, so he writes, and honor cannot be bestowed upon the early Jesuit Missionaries for the practical results of their exploits, the discovery of the copper region was actually announced in La Garde's book, five years previous to the establishment of the Sault Ste Marie mission, which was accomplished by Father Raynbault and Jaques in 1641 (Andreas' History). In 1666 Claude Allouez wrote that among the savages who frequented the great lakes, pieces of copper twenty pounds in weight were frequently found, "and held by them in superstitious awe and esteemed by them as domestic gods." In 1668 Jacques Marquette, undaunted as an explorer, and

with no equal as an evangelist, exploited these wastes of wilderness, and whilst converting the restless Otchipwes from their rude rituals, did not neglect to study the riddles presented in the metallurgy of its forest floors. To quote a recent writer, "it must not be forgotten that to the unremitting inquisitiveness of this venerable priest, the northern portion of the State of Michigan owes the debt due for its primal and practical discovery." From Sault Ste Marie about this time, Father Marest, an active successor to Hennepin and Le Caron, wrote that "the country was rich as Mexico in mines of untold wealth, with, however, no one to work them." In 1672 a map was published in Paris by these indefatigable Jesuits, showing with considerable accuracy 1600 miles of coast line. In 1689 Baron La Houtan in his book of travels described the copper mines of the peninsula. In 1721 P. De Charlevoix published similar information. In 1765 Captain Jonathan Carver brought the question of mining to both a focus and a climacteric. A company was formed in England, and in 1771 commenced operations on the banks of the Ontonagon river, under the management of Alexander Henry. The enterprise proved unsuccessful, work was discontinued, Mr. Henry declaring his reason for abandoning the experiment that "the country would have to be cultivated and peopled before its copper could be profitably mined." This same region produced 2,433,743 short tons of copper ore last year at a cost of $7,478,828. But neither Captain Carver nor Mr. Superintendent Henry were the earliest Argonauts, for far away back after the building of the original Eiffel tower, known as Babel, Anno—not Domini, but—Mundi 1757, the confusion of tongues drove the gossips from Ararat, some of whose descendants profiting by the experience of their ancestors during the deluge, set their ships courses, faced the mysteries of the unknown western seas, and—in the absence of a prohibitive poll tax—established a new Mongolian kingdom on the inviting shores of western America. These builders, these tower and mound builders, soon became imbued with the spirit of enterprise indigenous to western latitudes. Mementos of their industry remain to this day—practical legacies of skill—in the shape of the ladders, the levers, the chisels and hammer heads discovered by the early French explorers in the open veins of the Michigan copper mines, and in the specimens of free copper found within their ancient tumuli, and scattered throughout the entire northwest.

The temptation is great to follow up the story of the discoveries and varying development of the minerals of this wonderful Northland, and place on record the civilizing influences handed down to us from our so-called savage precursors. These recitals, however, are intended to deal with the living business truths of to-day. It is not to what *has* been done, but rather to what we *are* doing, and to what—as inheritors of the greatest known mining region of the world—we are *capable* of doing, that the attention of the practical student of trade and industry is now directed.

Whilst you can accept or reject this apocrypha of these early ages, as it best pleases you, let me present as an alterative some hard facts, solid as number one blue hematite, mined from the surface outcrop of naked truth and hammered into an unbreakable bar of actual realities.

My authority and base of supply for the dates, quantities, values and computations, scattered through these pages, exists in the printed or unwritten records of authorized enumerators, supervisors, inspectors, the reports of the government, and the computations of independent statisticians, economists and well known writers. Let me now

relate then the story of to-day, and whilst I beg your merciful criticism of pen and ink crudities, and modestly advance my own personal conclusions, I desire to challenge refutation of all submitted facts.

It may interest our southern industrial rivals to know that the first white man in old Menominee county was a negro. He reached the river in company with a Canadian voyageur previous to 1796, and before the advent of Chappieu, the Indian trader, who established an out-post for the American Fur Company, about that time. The idea of a colored gentleman being on the stockade, fence, or what you will, irritated the extreme sensitiveness of the red skin regulators, who then infested the shore-lands, anyway there is a "tumuli" on the banks of the Peshtigo river, called "Nigger's Hill." Whether the raising of this mound followed in not unnatural sequence, upon the raising of the blackman's wool, I offer no opinion; I merely note the circumstance. Thousands of Chippewas congregated hereabouts at that time, and the rivers and woods swarming with fur-bearing animals and game, made barter with Chappieu and his followers interesting. His fort strongly palisaded with heavy timbers to resist Indian attack, still existed in the early sixties.

RESIDENCE OF MR. JOHN T. JONES, IRON MOUNTAIN.

This peddler in pelts, this progressive exponent of that branch of commerce first instituted by that organization of "gentleman adventurers of England" under the name of the old Hudson Bay Company, whose trade ensign bearing its inviting legend *Pro pelle Cutem*, penetrated—and to-day still flies as I can bear personal witness in remote Arctic regions—was a representative regenerator. The fort stood on the Wisconsin bank of the Menominee. Chappieu mated with a squaw. Some of his descendants are said to be still living about the Peshtigo river in the state named. In 1822 William Farnsworth and Charles Brush, a brace of alleged white men appeared upon the scene. The story of the survival of the fittest was re-enacted, and Chappieu, after losing his property, made a final stand higher up the stream. The new comers appeared to be men of greater parts than Chappieu. They spread themselves, and extended their operations. They viewed the waving standards of the coniferous forests, and sized up the river's water-power, and in 1832 completed the first saw-mill ever built on the Menominee. Its cutting capacity

was 6,000 to 8,000 feet daily. Mark the contrast of to-day. The same river which then floated the few sticks of timber into their primitive mill pond, now annually bears upon its bosom past the abandoned dam site, over 500 million feet of sawlogs. In the wake of these enterprising civilizers came John G. Kittson, son of a British officer and clerk under Chappieu, a stirring man, actively engaged in trading and exercising marked influence over the Indians. Mr. Kittson was the first granger in the county, and operated two farms on the river, one at Wausaukee Bend, and the other at Chappieu's Rapid. These limits permit but mere mention of the leading names connected with the further colonizing of the district. Co-temporary history, such as it is, or anyway such as is accessible, relates the pastoral story of the loves of Bartholomew Chevaliere, with the daughter of Waubaushesh, a Menominee chief, whose assignations in the bosky coverts of primeval glades were later published in material form in the flaxen flecked locks of a less brown skinned odalisque, their joint daughter Marinette, who subsequently became the wife of John B. Jacobs, and afterwards the faithful spouse of one, William Farnsworth. Their seed multiplied as the sand upon the sea shore, and the town of Marinette, Wis., the scene of their honeymoon, remains and flourishes in order to perpetuate these facts.

The majority of the early settlers about this time reached Green Bay from Canada. They set sail in their primitive but staunch batteaux, ascending the mighty St. Lawrence, whose terraced woodlands smiled on this hegira of hardy explorers. Poling and portaging up these tortuous torrents, in the trackless footsteps of the still earlier Iroquois voyageurs who had led Frontenac and De Salaberry to fresh fields of pacific conquest, this vanguard of colonization fought its way. They crossed Ontario's steel blue flood, stemmed the turbid tides of Niagara, portaging above the great fall and the Chippewa rapids into ever tempestuous Erie, thence by the Detroit river and Lake St. Clair they reached the footstool of Huron's sombre sea, 580 feet above their starting point. Undaunted, they breasted its angry waters, and laughing at the chops of the Mackinaw channel, left Michillimacinac a purple pyramid on their starboard, and challenged the yet more boisterous breakers, which turn to yeast the black expanse of restless Michigan, before they sought shelter from tempest and pilgrimage in the less menacing harbors of peaceful Green Bay. The voyage occupied several months. Its dangers and hardships can be estimated.

About this time the entire population of the whole Territory of Michigan was only some 25,000. The Indians were peaceable and indeed soon commenced to drift into even bucolic ways. The river teemed with sturgeon and the bay with whitefish, and here at the emptying place of the broad stream, Menominees and Chippewas, with tomahawks rusty with peace, speared and netted the glittering fishes. In the gloaming of summer evenings their villages were bowers of picturesqueness. Glimpses of salmon colored birch bark tepees peeped from the green arbors of hemlock. Countless canoes lined the rush grown beach, whilst canopied under the white limbed balm of Gileads, and brown boled balsams, scores of bistre shaded wigwams stood out on the edge of the forest. Later these woods would echo to the sound of aboriginal merry making. Great pillars of bannocks and damper smoked before the many camp fires. Huge copper kettles steamed furiously, filled to the full with junks of venison and perhaps pork stewing in the bouillon. The aroma of fragrant tea arose from a host of smaller vessels. Piles of pancakes, reeking and pungent with sturgeon oil, stood in greasy columns in

warm proximity to the heat, whilst crisping in the glowing embers red-fleshed trout, and plump whitefish sputtered temptingly. Round and about would flit a squad of busy old wives, perfect mistresses of the situation, brought out into bold prominence by the lurid glare of forked flames—their bizarre costumes and accentuated features forming a study. With wooden spoons they would visit the bubbling cauldrons and stir the surging contents, and throw armfuls of sweet scented cedar wood upon the consuming fires. Round and about would lounge the ravenous head-men appeasing their cry of "*buckaytaymin*," (we are hungry) with the inevitable pipe, rank with willow weed, whilst further apart the young bucks, a blanketed circle, would kill time with Indian "monte" or the "game of the bowl," discuss projected barter with the crimson shirted voyageurs, or under shadow of the juniper trees arrange for trysts later on with the younger women of the tribe, whose native chic, purple black hair, milk-white teeth and winning ways, if somewhat wanton, foretold surrender. The Michigan Indian womenkind as a rule, are not a delectable lot. When young—very young—before exposure, greasy pigments and the consequences of maternity had done their work, there were some not altogether unattractive. Their complexions covered a wide range, from dead pale olive to dark dingy brown, but it was the combination of the former with dusky carmine, that presented any real beauty. Some of these belles at the Menominee had large languishing eyes, very tender and lustrous, and which they had acquired the art of using to perfection. Their long black hair would be spread upon a flat head and low broad brow, and carried behind, would end in a snake-like coil of plaits, hanging half way down the back, and whipped about with colored ribbons like a mare's tail at a country fair. There was but little grace in the figure, the development being too redundant, and not improved by a loose magenta colored bodice. A bright parti-colored shawl helped to hide the roundness of shoulders, whilst a skirt, short to the knees, would display a pair of broad bead-worked garters, strapped round blue cloth leggings, ablaze with the glitter of glass, about the concealment of which no anxiety seemed to be betrayed. Full of humor, laughter would follow even the implication of a joke, and then the broad and visible expanses of gray brown bosoms would set the torques of brass which rested on their surface, in clinking motion, and rouse the echoes of the woods.

From the time of the first Indian Treaty negotiated by Lieut.-Governor St. Clair of Upper Canada, in 1781, to the Treaty of Detroit, 1855, various treaties have been successfully carried out with the Indians of the upper Peninsula, with cession of territory and extinguishment of titles. Mixed marriages, war and pestilence, have planted, however, their inevitable check upon the red man's desire to "survive extinction." In 1812, of warriors alone, there were in the northwest 8,390, besides 33,000 women and children. In 1884 there were about 6,900 Indians all told, in all Michigan, 207 of whom resided in the county of Menominee. This is the dark side of the medal representing the savage and uncivilized era; what does the reverse show? In 1810 the white population of all Michigan was but 4528. In 1890 it was 2,089,792. It has increased at the rate of about 28 per cent. in the last decade. To-day in Menominee County alone, previous to its partition into Dickinson County—of which more hereafter—it stands at 33,939 souls. These figures present an interesting text for the ethnologist, and a wonderful commentary on the civilizing efforts of the earliest settlers, and the

industrial trade which followed the planting of the flag. The entire Indian population of the whole country including Alaska, barely exceeds 300,000 at the present time.

Andrew Gosland, John Quimby, Baptiste Premeau, Moses Hardwick and others also imparted vigor into the early history of the district, and prepared the way for the more material men of might, who with the pacific outfit of modern equipments, ere long attacked the pine clad buttresses of the Menominee, and whilst the air became filled with the music of the woodman's axe and the song of flying chips, the monarchs of the forest bowed their tufted heads, and through the long avenues thus opened, the light of knowledge penetrated; a gathering flood of commercial sunshine invaded the valleys and ascended the slopes, later to reveal the mysteries and unspeakable riches of Michigan's irondom.

The most important factors at this time, in 1856, and in this direction, were the lumbering companies organized and the mills operated by the Fowlers and Hosmers, the Wells Bros., Jesse Spalding and H. H. Porter, the two last named incorporating their

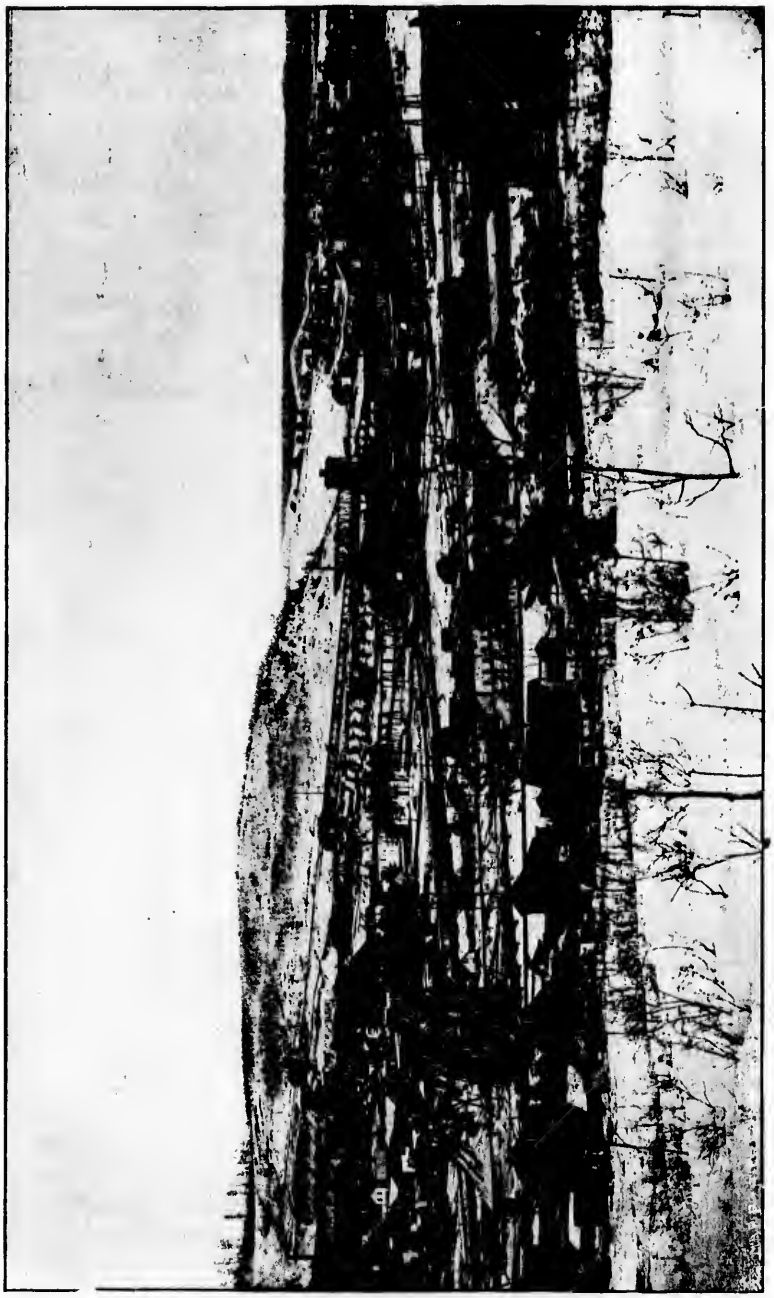
A LOG JAM ON THE PAINT RIVER.

venture in 1872 under the name of the Menominee River Lumber Co. The same year, the great Ludington combination also erected their first mill at Mission Point at Marinette. Nelson Ludington of Chicago, Harrison Ludington, afterwards Governor of Wisconsin, and Daniel Wells of Milwaukee, and subsequently, in 1858, Isaac Stephenson, being the chief promoters. In 1863, this corporation, or rather certain members of it, reorganized, Mr. Van Schaick securing an interest. With some changes in their personel all of these last named companies still remain kings of the industry. The members of the old Kirby-Carpenter company also organized in 1856, and still retain their rank amongst the leaders of the lumber barons of the continent. About this time the number of saw mills in all Michigan was placed at sixty-one, with an annual product of 108,000,000 feet. Ninety per cent. of this, however, was cut in the Saginaw District. The value of the cut in 1879 had increased to $60,000,000, whilst the amount sawed had reached 3,100,000,000 feet. Ten years later the lumber cut of Michigan had swelled to 4,207,741,224 feet, exclusive of 2,469,878,750 shingles. Of this the Menominee River District furnished 533,968,172 feet of lumber and 195,767,000 shingles. Truly the banner range of the Upper Peninsula is pregnant with vast trade possibilities!

In 1863, but twenty-six short years after the admission of the state, the old county of Menominee was organized. The men at this time, who were foremost in securing the necessary legislation, and who were closely identified with its creation, were E. S. Ingalls, who engineered the passage of the act of organization; John Quimby, Salmon P. Saxton, J. R. Brooks, S. M. Stephenson, and James S. Pendall, the then district member. The Hon. Daniel Goodwin was the first judge of this, the eleventh judicial circuit. From the date of the consummation of this important event, the development of the range lands proceeded with startling leaps of progress.

The Menominee, however, had yet to receive its baptism of adversity, and it arrived on the wings of the October wind in 1871. During that summer the dog days had come and departed with sirocco-like gales. For five burning months no drop of rain had fallen; valley and height lay pulsating under the unbroken scorch of sunbeams. The streams all but ran dry. The swamps became like so much sponge. Water was with difficulty obtained. The dead leaves in the forest were literal tinder; the fallen branches were the match-wood. No such "spell" had been experienced for years. The peninsula panted. On the evening of October 8th, the fires which had been smouldering for some little time, but which had occasioned no particular uneasiness, were suddenly fanned into fury by a wild wind which developed into a tornado. From Oconto, Wisconsin, the flames were driven towards Peshtigo, a swath of fire twelve miles in width, consuming everything in its path. Smoking ruins and the charred remains of human beings and animals alone being left as mute witnesses of once prosperous homesteads. Peshtigo was reached at eight o'clock; one short hour later the village was in ashes. Hundreds of men, women and children were lost in this holocaust. At nine o'clock it was a gray waste, a very cemetery of cremation. Half an hour later, the banks of the Menominee were swept. The village of Menekaunee went up in fire; the intruder leapt the river and reduced Gilmore's mill to first principles. A mile north of the town the river was again crossed, and another 160 square miles of partial civilization was burned. Hospitals were erected, search parties organized, and the dying and the dead recovered and removed. Of the terrors and the anguish of that night, the harrowing details are best left unwritten. The sum of the calamity may be understood when the following fact is realized. Within four hours the fires swept over an area of nearly 400 square miles, and over 1,200 persons perished in the flames.

The law of compensation is an universal one. Crushing disasters, whether personal, local, or national in their effect, are invariably succeeded by a corresponding measure of prosperity. An all-wise creator, in imposing misfortunes, seldom refrains from equalizing the trouble, by subsequent and equivalent blessings. If the region I write of—I speak not of the human sacrifice—had been compelled to surrender at loss the value of its forests, was not the divulgement of its mineral wealth, which occurred about this time, a beneficent trade compensation. Hitherto divine command had denied access to the master-key of Menominee's greatness. The sesame, which for so long had remained unspoken, was at last pronounced, and with the advent of the '70's, the bolts commenced to be withdrawn which were to disclose the vast vaults that contained the true ferruginous treasury of the western world.



BIRDS-EYE VIEW OF IRON MOUNTAIN—LOOKING EAST.

BIRDS-EYE VIEW OF IRON MOUNTAIN—LOOKING EAST.

CHAPTER II.

The Menominee Iron Range.

Discovery and Development.

The mountain solitudes of the Menominee, as has already been related, had up to the year 1870, been disturbed only by the raids of the pine cruiser, the canzonet of the half-breed batteaux man, and the metallic clip of the woodman's axe, and the further western exploiting of these rude spirits had been barred solely by the cataracts created by the precipices at Bequinnesec.

Speculation without being rife, had yet existed in a passive form in the minds of the more thoughtful of the older settlers, as to the not improbable possibility, of the existence of ore deposits similar to those discovered, and already worked to intermittent advantage in the county of Marquette. So far back as 1866, Indians had poured into the wondering ear of Father Bourion stories of the great fields of iron, that flanked the river only three to four days journey from its mouth, and these travellers' tales had in turn been whispered into the more practically alert ears of Edward Breitung, then a general merchant in the village of Negaunee. On the Superior slope up to 1864 the Jackson, Cleveland and Lake Superior were the only mines in operation, and they with the exception of the Jackson, whose history has already been sketched, had been producing with varying degrees of success ever since 1854, with no new discoveries having been made, and these, according to Father Bourion, had been worked chiefly in the most primitive way "in open pits, where only few men could labor with advantage, and only in day time." These mines "had worked scarcely six years, when captains and miners claimed that they were nearly exhausted, and the few discouraged settlers were getting ready to abandon the ungrateful field which did not promise anything but starvation." These discouraging reports were not believed by all, for as my friend Pere Bourion asserts, "there were those amongst the most intelligent part of the community, who could not but realize, that in the course of time, new mines would be discovered."

Foremost among the limited few who shared in this belief, was the Hon. Edward Breitung, who—whilst the owners of the existing mines not only refrained from further explorations, but seemed apathetic about the further development of their properties—was unremittingly active in his investigations, always having at hand a band of well-equipped explorers available for the field at any moment. Stirred by the reports of the woodsmen, priest and trader studied the map of Michigan, and judging from the meagre information furnished, if true, concluded that the deposits were located in range 29 or 30, townships 40 or 41. Subsequent discoveries proved the correctness of these surmises.

At this time, however, all of Mr. Breitung's energies were concentrated on the development of the old Washington (the present Humbolt) mine, and in exploring the spot on which the great Republic now stands.

In 1866, Thomas and Bartley Breen, of the town of Menominee, located a "mine" bearing their surname, on section 22, township 39, range 28. No further explorations however were proceeded with until 1870, when the fee of the property, consisting of three "forties," having passed into the hands of the discoverers and Judge Ingalls and S. P. Saxton, the latter commenced the first active mining operations recorded in the region by sinking several test pits and cutting two long trenches across the formation. This deposit outcropped adjacent to the present railway station at Waucedah.

A lull in operations in 1870 permitted revived attention to be directed Menominee-wards and John N. Armstrong, an old woodsman and explorer, was sent to prospect upon the new range, and examine and take up lands for Mr. Breitung. Acting upon the information thus ac- quired, Mr. Breitung secured part of sec- tion 10, township 39, range 29. At about the same time S. D. Curry, another ex- plorer, ascended the river and instituted a similar search for the suspected mineral. From these adventur- ers it was learned— so writes Mr. Lew Whitehead, one of the earliest settlers on the range—"that a banded ferruginous ore was in place but that little good was ever likely to come of it."

DR. NELSON P. HULST.

Active operations, however, yet remained in abeyance. The work of Mr. Saxton was purely tentative and completely prim- itive, and it was not until 1872, when some specimens of the ore had reached the hands of the Hon. Harrison Ludington, then Gov- ernor of Wisconsin, and had by him been brought to Milwaukee for purposes of analysis, and submitted to Dr. Nelson P. Hulst, chemist for the Milwaukee Iron Company, that the business attention of representative iron men was drawn to the mineral resources of the range. The result of this examination proving beyond question the high quality of the product as tested, the company decided to proceed with the thorough exploration of the country, and to this end the services of Dr. Hulst—who was vested with plenipotentiary powers—were secured. So with proper regard for the eternal fitness of things, the expert who had put to crucial test the latent virtues of the specimens as submitted, was further entrusted with the responsibility of determining the commercial value of the alleged ore beds of the new Menominee. In explanation of the doctor's peculiar qualifications, it might be mentioned that he was a graduate of Yale, and of the class of 1870 of the Scientific School of Mining Engineers.

In pursuance of this far-sighted policy on the part of the Milwaukee Iron Company, Mr. Hulst departed for the wilderness in the month of June of the same year, acting under the instructions of Mr. J. J. Hagerman, and Mr. J. H. Van Dyke of Milwaukee,

the chief promoters of the corporation named. He visited the Breen location and other points, and returned to headquarters fully satisfied with the results of his investigations. He organized a working party, and in the following October re-visited the same objective point with a force of seventy men, sank test pits on the Waucedah property and elsewhere, and worked west and north to Felch Mountain, prospecting and exploring as he went, and building supply roads into otherwise inaccessible places. During this period he discovered the Vulcan mines, where the typical blue soft hematite, which characterizes the product of the range, was found in abundance, and was thus employed in interpreting the hieroglyphics of these dull escarpments, until 1873, when the memorable financial panic descended like a bolt out of a clear sky, burked further speculations, and left everything at a standstill until 1876. At this time every pine cruiser was a mineral expert—in his mind—though not one in twenty could tell "trap rock" from "iron ore." As a matter of fact, however, with the exception of Dr. Hulst, Mr. Buell and Mr.

VULCAN HOTEL.

Raphael Pumpelli, there were but one or two other scienced explorers on the entire range. Reports as to its extraordinary mineral wealth soon came to be circulated, as a consequence of these observations of professional and amateur mineralogists, and the attention of the outside world of iron was soon riveted on the rufous rocks, which, geographically speaking, trended west by north from isolated Waucedah.

In these first days of exploration no one played a more important—if less prominent—part than did Mr. Lewis Whitehead, engaged by Dr. Hulst as chief of a party of explorers, and who left Negaunee on the 18th of September, 1872, for the scene of development. In the back parlor of the old fashioned Vulcan Hotel, the first rest house on the range, and a very haven of ease for the weary exploiter—a sketch of which is here dedicated to all old-timers, and submitted as a memento of early days—Mr. Whitehead related to the writer, a few weeks since, the tale of his experiences.

MR. WHITEHEAD'S STORY.

"To begin operations," said my host, "I hired twelve men at Negaunee and took them by tug boat from Escanaba to Menominee, thence by road up the river for sixty miles, to the property then known as the Breen mine. We arrived there September 23d,

and found a camp already prepared, large enough to accommodate twenty men. Of the few pits sunk at that time one was in brown hematite. On November 1st, we ceased our explorations for a time, leaving a showing of brown hematite one hundred feet wide north and south, although the pits exposed jasper and quartz mixed, along the belt for three-fourths of a mile. At this time the right of way for the branch line of the Chicago & Northwestern railway had been cut out two-thirds of the way from Powers on the main line of the Peninsula division to the Breen, and camps constructed, but the work was discontinued and the camps were burned the following summer.

In 1872, Dr. N. P. Hulst and Dr. Credner—the latter of whom originally visited the district in 1867—had camped on section 10, township 39, range 29, and had done some test pitting, which resulted in one of the pits between sections 9 and 10, showing blue hematite. On October 15th, I marked a tree near the present Vulcan depot, and began the erection of camps for forty men. At the same time a supply road was cut to the Breen mine, over which the men were brought to Breitung, as the camp was then called. A road was also cut to the mouth of the Sturgeon river, the New York farm of to-day where to my surprise I found a logging camp belonging to the Menominee River Lumber Co. Mr. Rice, who was in charge, had his wife and family with him. Across the river in Wisconsin, Mr. Pat Mullins had commenced a clearing. He had married an Indian woman, and was engaged in trading. Supplies were now brought direct from Menominee to Breitung, and an extensive exploration for ore could be begun along the range. Portions of sections 6, 9, 10 and 11, township 39, range 29, were explored by pits, shafts and drifts. In mining, the old clay bar used for wet holes, with black powder, was hauled by team from the shores of Green Bay. Glycerine in its liquid state was little used at that time, and Giant powder was not well known. The pits and trenches near the line of sections 9 and 10, soon showed a blue ore 57 feet deep, 70 feet wide and 155 feet in length, which was estimated at about one-third rock, or 41,230 tons of ore in sight. This deposit was afterwards called the Vulcan. Our supplies at this time, together with the mail and the doctor, came from the mouth of the Menominee River. Seven days were allowed the teams to make the round trip. On January 1st, 1873, our buildings consisted of a dining camp, sleeping shanty, smith shop, supply shed, and a ten by twelve foot office, built of logs and situated in the midst of dense forest and swamp, from which issued swarms of tormenting flies. The camp was covered with "shakes"—cedar slabs four feet long, and as wide as the cut would permit—and caulked with moss. The Indians supplied us with plenty of venison and the wolves with music. In March of 1873, a saw mill was erected with a four-foot circular and a capacity of 10,000 feet per day, and here was cut the lumber used in the first frame structure built upon the range. This building was used as a store and office. The mill sawed in all about 100,000 feet. This same month trains were running between Menominee and Escanaba."

MR. LEW WHITEHEAD.

At this time Mr. Whitehead brought his wife and family to share his fortunes in the wilderness, making Mrs. Whitehead and Mrs. Rice, who was settled at the mouth of the Sturgeon river, the two pioneer white women of the iron range.

Continuing, said Mr. Whitehead, "The summer of 1873 was spent on many sections of the range. Groups of men in parties of from five to ten were sent out. Mr. Clark Roland was foreman at Section 10, while Mr. Daniel Bundy was assistant explorer, and divided his time either with Dr. Hulst or myself in running section lines, taking topography, or locating camps. In the same year a wagon road was surveyed and cut out to Felch Mountain, section 22, township 42, range 28, now known as Metropolitan. This road was called the Iron Road. Its length from Vulcan to Metropolitan was 23 miles, and its cost to the Milwaukee Iron Co. was $1,300. Camps were put in, and in the fall of 1873, a *shipping ore was found.* Iron Mountain or the Ludington Mine property was tested by Dr. Hulst the early part of this winter, but a banded ore only was found. (It might be well to state for the information of the unlearned, that by a "banded ore" Mr. Whitehead referred to a formation of jasper-rock and iron-ore, resting upon each other in layers like a sandwich.) At the same time Mr. Dickey's homestead, west of Quinnesec, and the Curry mine property, were explored for ore by Dr. Hulst. We found, however, but three points showing a shipping ore, the Breen, West Vulcan and Metropolitan, by which names they are still known to this day. In March of 1874, our party was disbanded and driven from the range by the "panic" then raging.

Besides our own work in 1873, Mr. John L. Buell had also been doing some on the Quinnesec property and had actually carted some ore to Menominee, and this was the third great step towards opening up the Iron Range.

The *first* step was by the Breen Boys; the *second* by the explorers under Dr. Hulst, for the Milwaukee Iron Co.; the *third* by the shipment of ore by Mr. Buell.

On October 8th I was sent by the company to test Mr. Buell's working at the Quinnesec. Deepened the shaft to 35 feet, and then drifted north 39 feet, all through shipping ore. On January 4, 1875, we broke camp, and the wilderness of the Menominee Iron Range was abandoned until 1877."

* * * * * * * *

Let us leave Mr. Whitehead and his interesting reminiscences for a while, and follow up the operations of Mr. Buell. Dr. Hulst's initial explorations and discoveries have already been related. If you are interested in a man's work, it is better to give you an insight into his physical and mental capabilities, for it adds to your interest in his exploits. You are fairly familiar by this time with N. P. Hulst and L. Whitehead, let me—though I am not a dealer in biographies—introduce you to John L. Buell.

Mr. Buell is an Indiana man by nativity. He is *facile princeps* a representative range man, and a born explorer. He drove the first wagon and jerk-line team that ever pulled out of Leavenworth, Kansas, over the intervening 800 miles of broken trail for Pike's Peak, and steered in those early days a "four yoke of cattle" outfit up the Arkansaw. He possesses high scholarly attainments, can rebuke a wayward miner in other than his mother tongue, or hold an educated audience with his oratory. He was a member of the House of Representatives in the legislature of 1873–4, at Lansing, Mich., for the united counties of Mackinaw, Schoolcraft, Delta and Menominee.

On the 20th of May, 1873, Mr. Buell commenced his first practical explorations on the range, on the southeast quarter of section 34, township 40, range 30, the present site of the original Quinnesec mine. On the 2d day of August, same year, ore was struck by a line of test pits, on a formation running from south to north. In the winter and spring of 1873–4, the first consignment of ore mined on the range was taken by Mr. Buell by sleigh and wagon to Menominee, about seventy miles in all, forty miles of which was over the state road. Fifty-three tons was thus transported, the analysis showing 66.07 metallic iron, .013 in phosphorus, and 4 in silica. This product was smelted by the Menominee Furnace Co. Mr. Buell had an interest in the property, by right of agricultural scrip entry in 1864, which was now leased to the Milwaukee Iron Company. By the failure of this company, however, and by the death of Capt. Ward further operations were delayed for the next two years. Meanwhile, Dr. Hulst, the veteran explorer who in 1872 had cachéd his outfit and returned to Milwaukee, was in 1873 working like a beaver in the footsteps of Major Brooks, State Geologist, on section 6, township 39, range 29 between the Quinnesec and the Vulcan, and in 1874 was exploring in the neighborhood of the Republic mine in the Marquette Range. During the fall of 1872, the Chicago & Northwestern Railway Co., wisely apprehending that the ore production was more than promising, deflected outlook for an immense the road they were building from Marinette to Escanaba to accommodate the new iron fields. Six miles of right-of-way was cut from Powers westward toward the Breen mine with a view to the immediate construction of a branch road. In the fall of 1873, as the iron interests in common with the commerce of the country were suffering with the then universal depression, explorations and railway operations were alike discontinued. I will take advantage of this season of enforced rest to submit for the guidance of those who are interested, in the past, present and future, of this leading iron bank of the world, an outline sketch of its chief physical features.

HON. JNO. L. BUELL.

According to Dr. Rominger in his report to the State Board of Geological Survey, 1871 (Palœozoic Rocks) the upper peninsula of Michigan comprises an area of about 16,000 square miles, exclusive of islands amounting to 300 square miles additional. On the north it is bounded by Lake Superior, to the south by Lakes Huron and Michigan, the east end by the river St. Mary. The southwestern line between it and Wisconsin is given by the bed of the Menominee River, flowing into Green Bay, Lake Michigan, and by the Montreal River emptying into Lake Superior, which bounds its remaining western portion. The land so defined lies between the 45th and 49th degrees of northern latitude, and 83° 45′ and 90° 93′ of longitude west of Greenwich. An air line drawn from the mouth of the Menominee River to the mouth of the Montreal River, is about 175 miles long; from the mouth of Montreal River to the north end of Keewenaw point, a similar line measures 150 miles; and a line drawn from Marquette to the mouth of the Menominee River amounts to about 100 miles. These three lines inclose the iron and copper districts.

Major T. B. Brooks, State Geologist, in his report on the Iron Bearing Rocks of the Upper Peninsula, 1873, describes their conformation as follows: "These *Iron Bearing Rocks*, corresponding it is assumed with the Huronian system of Canada. consist of a series of extensively folded beds of diorite, quartzite, chloritic schists, clay and mica slates, and graphic shales, among which are intercalated, extensive beds of several varieties of iron ore. The same rocks occur on the east and north shores of Lake Superior, where they also contain iron. The Huronian area equals about *1,992 square miles*, or nearly one-eighth of the whole area of the Upper Peninsula."

Besides, the strip of country already referred to in a previous chapter, as embracing the "range proper," the Menominee ore region contains—extending from the point of beginning to where it crosses the river of its name to the west in township 40, range 31—five districts or group of mines, now known as the Felch Mountain, the Florence, the Crystal Falls, the Iron River and the Hemlock (township 44, range 33), some 60,000 acres in all. Of these lands it is hardly possible to acquire any by purchase. The usual practice now, is to permit exploration, subject to "option," which gives the right to erect camps, use timber, and sink shafts and test-pits, wherever desired, conditionally upon the employment of a given number of men, with option of lease after a certain amount of ore has been developed. This lease carries the tax of a royalty, of from 25 to 50 cents per ton, according to the degree of excellence, of all ore mined, with the proviso that the lessee shall pay royalty on 10,000 ton of ore per annum, whether the amount is mined or not. The woods are full of explorers and an immense sum is annually paid out on explorations, the results of which are usually kept a profound secret. The ores of the range are nearly all hematite, varying much in appearance and grade, ranging—to quote Mine Inspector J. B. Knight—"from the softest blue ore of Bessemer grade to a hard ore, having almost the aspect of a specular, and containing a high percentage of phosphorus. As might be expected from an ore formation, varying so much in width and subject to so many changes of topography, the trends of the ore bodies are far from uniform. It is, however, conceded that the range is bounded on the south by the Huronian granite and on the north and east by the Laurentian rocks. North of the Laurentian rocks, and west, may be found the Huronian rocks. The trend of the ore beds is not uniform, neither is their dip or pitch. For instance, that of the Chapin at Iron Mountain being to the north at about 75 degrees, and that of the West Vulcan to the south at 70 degrees, whilst at some of the more shallow mines the question of ultimate dip is yet undecided, because of the rolling tendencies of the ore bodies."

It is a difficult matter, I know, to inspire enthusiasm amongst non-scientific persons, for a subject necessarily so dry a one as this, and sooner than jeopardize the feeble grip that I may have upon the man who may have been tempted to glance at these typographically pretty pages of antique primer, I have adhered to an original resolve not to kill him right off with a string of "ologies and zoics." Whilst anxious to keep you "in touch" with the subject in hand, I can measurably sympathize with the average man's quite forgivable distaste for the jaw breaking lingo of science. Indeed, I am largely of the same way of thinking myself, for as a matter of fact I am somewhat in the same position as La Fontaine, who, in presenting his compilations to the public called it a "nosegay of culled flowers, with nothing of his own but the string that tied them."

Our positions in this respect are identical, save with one important exception, for

whilst he offered "fables," I present "facts." If then you will but bear with me, whilst I fire at you some of these hard, uncompromising facts necessary to an intelligent understanding of the wonders of inviting Menominee, I will promise you a more tempting programme of "unequalled attractions" later on.

Mr. Charles D. Lawton, State Commissioner of Mineral Statistics for Michigan, and an indisputable authority, thus refers in his last annual report to this same range of metalliferous mountains:

The general trend of the formations of the iron districts is east and west, but locally there is great modification, as in the region of the Michigamme, Hemlock and Paint River, etc., the trend is north and south, or northwest and southeast. It is so also, east of Crystal Falls at the Hollister mine and south at the Dunn, Mastodon, etc At the Vulcan, Norway, Chapin, Florence, etc., the trend is east and west. The general dip of the formation is to the north, but of course this is locally modified by the folding of the formation. A matter that has not been clearly made out yet, is the fact that in the east end of the Menominee Range, to the west beyond Keel Ridge, the dip is to the south, and a very prominent bluff of limestone forms the footwall of the ore, that is, the ore is above it. At Iron Mountain, however, at the Chapin, Ludington, etc., mines, the dip of the formation is to the north and the limestone is in the hanging wall of the ore. There is no change in the rocks. The slates and limestone are identical; the dip is reversed. The rocks in which the ore occurs, both at Iron Mountain and further east at the Vulcan, is a soft, friable, black argillite that crumbles and disintegrates on exposure, and which, low in the mine, has no sustaining power. The drifts, whether in foot or hanging wall, crumble and crush down so as to soon become impassable. Further west, at Crystal Falls, the jasper ferruginous schists in which the ore is found, are firm and generally make a good roof to the mine. In the mines about Crystal Falls one sees large rooms where the ore has been removed.

Mr. J. T. Jones, Superintendent of the Hamilton Ore Company, and who has made a study of the subject, is of the opinion that "the formation at Iron Mountain is the "south branch of the fold, which dips north, and comes up with a southerly dip north "of Lake Antoine, where the lime stone, etc., appear dipping south."

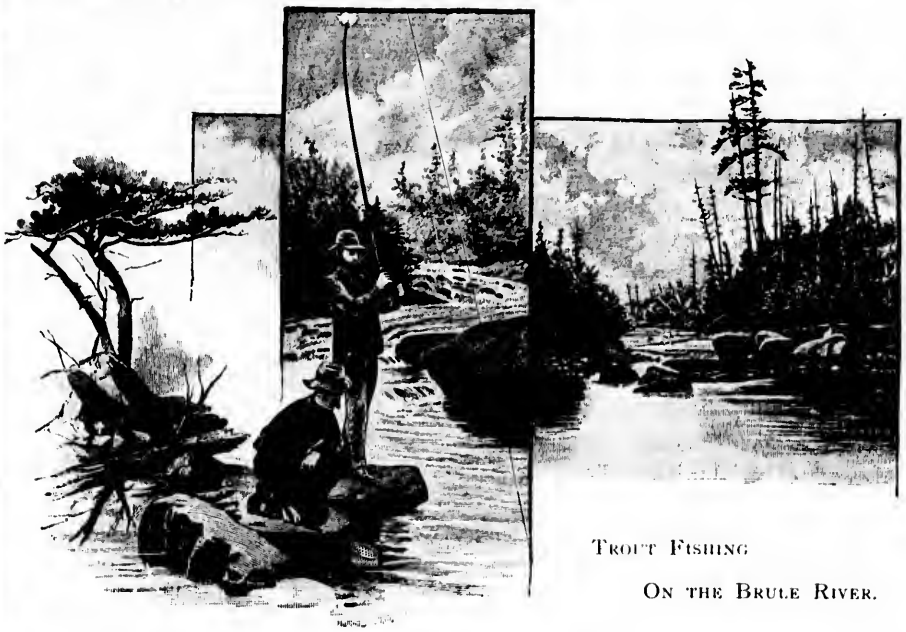
Mr. D. C. Davies, the well known expert, in his treatise on "Minerals and Mining" (1889), in describing the iron ore of Michigan, refers to the deposits as "occurring in a vast succession of thin beds in slaty and hornblendic rocks. These ferruginous slates stand out as successive cliffs of from 50 to 150 feet high, and really seem mountains of iron ore. The belt extends a length of about 150 miles. The highly ferruginous deposits are not continuous over the whole of this length, but occur at intervals in areas, extending from a few hundred yards to over a mile long. The deposits consist of peroxide of iron, mixed with silicious matter. They occur as thin alternating beds, the iron at times consolidating and forming beds of great thickness. These beds are traversed by joints that cut the ore into square blocks.

In one mine the deposit shows the varieties of structure enumerated, having in the center the laminated structure, and passing on each side, into compact ore of great purity. In its purest state the ore is a compact specular ore, having profusely disseminated through it crystals of magnetic oxide. Some of the deposits are made up of thin bands, not exceeding a quarter of an inch in thickness, of pure fine-grained peroxide of iron, and jaspery ore. On one location the deposit is 1,000 feet thick and one mile in length, and the supply of iron ore here atone is sufficient, it is said, for the wants of the world for ages! The average percentage of iron is from 60 to 70, and the ore contains hardly a trace of sulphur, phosphorous or titanic acid."

The iron ores of Norway and Sweden are popularly supposed to be the purest in the world. Analyses made from 28 districts, however, show ores ranging from 30 to 71 per cent. of iron, the working average being 50 per cent. only; and though low as a rule in phosphorous, reaching in the case of the celebrated Danemora mines 1.62 as a maximum, they suffer, as indeed do all the ores of the world when placed in comparison

with those of the Menominee. If phosphorous exists to a greater degree than one-tenth of one per cent., iron ore is not up to Bessemer standard, and it is for this most practically cogent of all reasons that Michigan ores outrank the ores of Alabama and Virginia, and in truth the ores of all southern states. It is a very great rarity in the south to find ore which will grade as Bessemer.

The topography of these iron-bearing cliffs of Huronian formation, is in itself of course a key to the prospector in his researches, as the surface features of the earth are as an open dictionary to one who would read the concealed testimony of the rocks beneath, and an explorer would, on general principles, be regarded as an ass if he wasted his time searching for iron among the silurian sandstones.



TROUT FISHING
ON THE BRULE RIVER.

"The greater simplicity in the geological structure of the Menominee Range," says Major Brooks, "as compared with the topography of the Marquette and Gogebic ranges is demonstrated in a correspondingly less varied surface. Obeying the influence of the great rock beds beneath, the elevations have a tolerably uniform east-west trend and consequent parallelism. The south iron range of which the Breen mine is the east end as far as known, can be traced through a greater part of its course by a ridge often bold. The capping of horizontal sandstones which characterizes these hills, gives a somewhat more even character to the crest line, and in places produces a strikingly different profile."

Now I could fill a ten-volume encyclopedia, with facts of burning commercial interest relative to the wondrous revelations which a thorough study of these precious mountains has revealed. I could quote you authorities by the score, the printed positive deductions of other leading scientists as to the transcendent richness of the belt of crude steel which

zones these table lands of the north. An inland gulf stream of minerals, that within the black depths of its chrystalized flood, bears a fruit of the earth to which—industrially speaking—even gold is but refuse, and silver dross. But neither you nor I have the time, neither does the necessity exist to verify truth. The authorities I have quoted are unimpeachable. An enquiring world can accept them in their entirety. If they have any fault it rests in the fact that in them, like Sam Weller's correspondence, the salient points are not brought out "strong enough."

However, the gauntlet such as it is, is thrown down. Menominee, physically paramount, industrially unapproachable, challenges the world. Where are the kings of capital and princes of labor, who will pry open the bars of the visor of its iron mask?

Those who swelter under the burning shadows of the southern cross are asked to remember that the very firmament itself—embodiment of unalterable principles—has hung a magnetic fixed star in these nebulous wastes of northern skydom, which with unswerving fidelity to its trust, has for the long centuries since the creation been beckoning the iron master, and guiding the explorer to its metallic footstool—the swart ranges of the Menominee—over whose red fields of buried treasure, it hangs, an undimmed harbinger of hope.

* * * * * * * *

Now, besides the veterans referred to, there were other mineral missionaries in the field, for on May 10, 1871, "a man from Menasha," Wisconsin, reached the ranges. He had passed five lustrums of years in exploratory pursuits, and was steeped in practical mineralogy. Specimens of iron ore had been brought to the land office of his town by timber-men, and he started out to verify their statement, that they had "picked them off the ledges."

Township 40, range 18, on the Wisconsin side of the Menominee, was scoured by ore hunters, and on the 23d of October, 1873, whilst idly striking the ground with a pick, Mr. H. D. Fisher discovered what is now known as the celebrated Florence Mine, on the north ½ of southeast ¼ of section 20. A little "stripping" was promptly done, rare indications were developed and five days afterwards the lucky explorer returned to Menasha, and deposited sufficient cash at the land office, to effect the purchase of "six forties" of government "wild realty" at $1.25 an acre. For six years, however, but little development followed, absence of shipping facilities forbade any great outlay, and up to 1879, $1,676 only had been paid out on work and material. With that year, however, came trade salvation, in the shape of Messrs. Van Dyke and Hagerman—the badger and the wolverine, industry and courage—who purchased a three-fourths interest, prosecuted development, arranged for railway extension, and in delicate acknowledgment of Dr. Hulst's "good works," called the new venture "Florence," in honor of a prominent member of the explorer's family. The fall of the following year, 14,000 tons of ore were shipped by rail to Escanaba. The iron stone panned out 60 per cent. of metal and carried from 150 to .0200 of phosphorous. A first class non-Bessemer ore. I would add that it cost $1.25 per ton by railway to Bay de Noc, staggered under a 60 ct. per ton royalty, and sold for six dollars on arrival at Cleveland. I must, however, hark back if I have any regard for synchronism.

In 1877 the Menominee Mining Co., which had purchased the leases of the Milwaukee Iron Co., and of which new company Dr. Hulst was a member, renewed

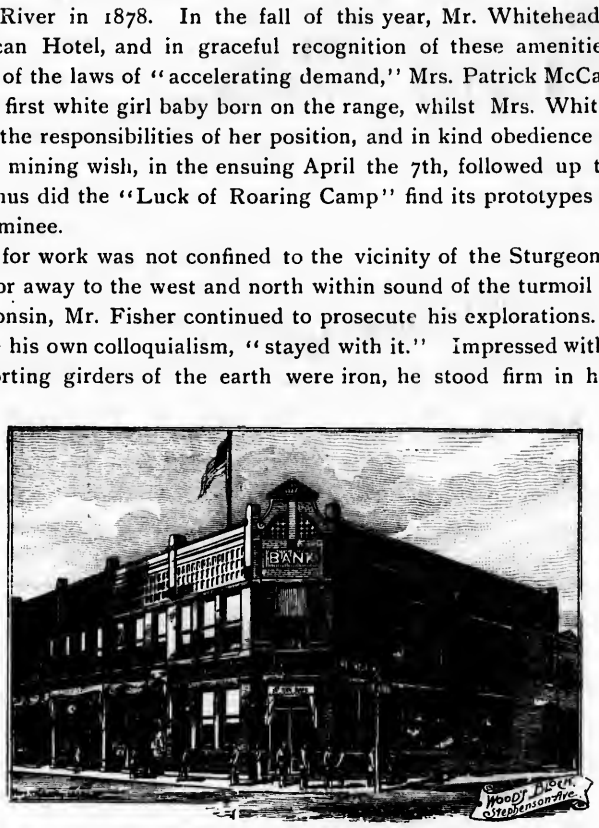
operations at the Vulcan, which had been interrupted by the causes previously written of. The doctor was again in harness, and in evidence of his realism, may be recorded here, the discovery of the celebrated Chapin mine at Iron Mountain, where in 1878 the first shaft was sunk—a continuation of a test pit—when at a depth of between 60 and 70 feet ore was first disclosed. In 1880 the first shipments of ore from this bonanza amounted to 34,556 tons. In 1890 these shipments had increased to 742,843 long tons, and as yet they have not even penetrated the rind.

From now on the movements of expert geologists were watched, and every man capable of striking a hammer or wielding a pick became a prospector, and new "chums" whose names are now household words, and whose every mention is synonymous with the Menominee, appeared upon the scene in pursuit of the almighty dollar. Meanwhile our friend at the Vulcan hotel was humming along, hoeing his row, to the satisfaction of his employers and presumably of himself.

"You see, partner," said Mr. Whitehead, picking up the thread of the dropped warp, "in March, 1877, the Menominee Mining Co. engaged me to overlook their operations. The Menominee River Railway was again under construction, and 'getting in its work,' for a gravel train at Waucedah, on the 10th of July killed its first man." In the mines open work was proceeded with. On the 2d of September, 1877, a shipment of 25 carloads was made from the Breen Mine, of which Gerome Schwartz—Mr. Schwartz is now president of the village Board of Crystal Falls—was captain. The old Breitung, now the Vulcan, became headquarters, and the monarchs of the forest, in obedience to the drum head court martial of the axeman, were guillotined on requisition of the miners, for use in docks, pockets and dwellings. The experiences, history and daily routine of all these new mining claims were, of course, greatly similar; a description of one is applicable to all, hence my lingering over details. About this time 4,021 tons of ore were shipped from West Vulcan. On the 12th of September the first carload of freight, consisting of hay, bar iron, etc., backed into Vulcan. This same day Dr. Hulst entered upon his duties as agent in residence of all the interests of the Menominee Mining Co., Lew Whitehead, captain at Vulcan, A. C. Brown, purchasing agent, Henry Fisk, book-keeper, and Dr. Belknap, physician. The first school meeting on the range was held in a logging camp, between the Vulcan and the mouth of the Sturgeon. Miss Reath was appointed teacher and "school was kept" within the camp, the dark forest being the playground, and the stately fir trees the bounds. Generations come and go; history repeats itself; the dramas and tragedies of life are enacted, as they were fifty years since, with the difference that the thirst for knowledge—on which, rightly or wrongly, is supposed to depend the acquisition of wealth—surpasses all other desires, and the ambition to "learn" is not confined to the courts of the world, but stirs the tent-dwellers of the wilderness. In 1878 the Breen Mine was closed down and vacated. In May of the same year Mr. Curnow, of Milwaukee, took charge of the Quinnesec Mine, and the place commenced to boom as a mining town, and as the terminus of railroad construction. In August of the same year, the Norway Mine, section 5, township 39, range 29, was opened up by the Menominee Mining Co., the explorations having been carried on by John N. Armstrong. The Cyclops was also opened up in 1878, as was the old "Saginaw, section 4 mine," later known as the Perkins—township 39, range 29—re-christened in 1879, in honor of Captain John Perkins, the new superin-

tendent. The first giant powder used on the range was utilized in blasting the bed of the Sturgeon River in 1878. In the fall of this year, Mr. Whitehead formally threw open the Vulcan Hotel, and in graceful recognition of these amenities of life and in demonstration of the laws of "accelerating demand," Mrs. Patrick McCarty in February introduced the first white girl baby born on the range, whilst Mrs. Whitehead, in equal recognition of the responsibilities of her position, and in kind obedience to an unwritten but unanimous mining wish, in the ensuing April the 7th, followed up the lead with a baby boy. Thus did the "Luck of Roaring Camp" find its prototypes on the banks of the wild Menominee.

The fever for work was not confined to the vicinity of the Sturgeon or to the State of Michigan, for away to the west and north within sound of the turmoil of the brawling Brule in Wisconsin, Mr. Fisher continued to prosecute his explorations. From 1871 to 1879 he, to use his own colloquialism, "stayed with it." Impressed with the conviction that the supporting girders of the earth were iron, he stood firm in his faith, and by



FIRST NATIONAL BANK, IRON MOUNTAIN.

patient perseverance, finally exacted the toll which persistence merited. For four long years he exploited the country which lay in the uneven basin of the Pine and Brule Rivers. Neither coal nor even gold was possible. Iron and iron only was the lode-star of his hopes. In April of 1876, exploring was commenced on section 34, township 40, range 18, for Tuttle and Harvey of Cleveland, O., and on May 16th ore was discovered, and declared by Prof. Chas. E. Wright, Major Brooks and Prof. Pumpelli to be one of the most promising finds on the Upper Peninsula. This mine is the Commonwealth of to-day. Later explorations by Mr. Otto Davidson have disclosed a large body of ore on the south-east ¼ of section 34, the Badger mine, a most important discovery. In 1889, Mr. Fisher also discovered the Armenia, two miles from Crystal Falls, the result of personal research.

The years 1878, '79, '80, '81 and '82 succeeded each other as periods teeming with extraordinary incident in the history of mineral development in the region already described as the Menominee Iron Range. Men of every degree of experience hastened to join the restless eager throng hurrying to the land of hematite. The story of the

innumerable discoveries, and the wonderful quality of the ore unearthed soon became noised abroad, and every day witnessed the advent of miners, laborers, camp followers, and a leaven of shrewd business men. Quinnesec was the objective point, but tales of richer deposits further inland induced many a one to abandon a visible El Dorado, for an unvisited Golconda. Some with but little means, some with less, a few with a knowledge gained of books, others with facts learned of experience, all full of hope, and none dismayed, this oddly assorted army of humans of divers tongues, and diverse nationalities boldly plunged into the uninviting jungle that draped the mountain palisades, each secure in the belief that "he himself" was fated to strike it rich. In 1879, Mr. John R. Wood, now President of the First National Bank of Iron Mountain, discovered the Cornell mine, of which he became manager, and at about the same time the Traders, the Canadian, Curry, Garfield, Hecla, Hancock, Illinois, Indianna, Keelridge, Stephenson, Sturgeon River and others were developed with varying degrees of success, the success of the enterprises depending almost entirely on the amount of capital available for purposes of complete exploration. Iron Mountain, Florence, and later on Iron River and Crystal Falls, became in turn the scene of more extensive operations, and from isolated mining camps, arose the prosperous towns and thriving villages which now compete in friendly rivalry for the supremacy of the Menominee.

In 1877, the range with one mine in operation shipped 4,563 tons of ore. In 1890, with thirty-two mines in operation, it shipped 2,282,237 tons of ore.

You have been shown what it has done, you have been told what it is doing. Again bear with me still further, whilst I reveal its actual condition of to-day, and cast with your permission a horoscope of its future.

GROUP OF MINERS, TIMBER SHAFT CHAPIN MINE, IRON MOUNTAIN.

GROUP OF MINERS, TIMBER SHAFT CHAPIN MINE, IRON MOUNTAIN.

CHAPTER III.

The Ore and the Iron of the Menominee.

Comparative and Affirmative.

If the chronicles of Moses are worthy of credence—and I dare not dispute them—Tubal-Cain, a son of Zillah, who was a daughter of the original family who led the fashions in the land of Nod, 4,003 years before the birth of our Saviour, was the "first instructor of all artificers in iron."

These good people, however, could hardly be called an industrially progressive lot, for though they were addicted to the manufacture of tin trumpets and that sort of thing, it was left to Og, the king of Bashan, "remnant of giants," 2,552 years afterwards, to apply the manufactured product of hematite to any domestically economic purpose. "Behold," says the book of Deuteronomy, "his bedstead was a bedstead of iron." It is but fair to mention here though, in justice to the men of Canaan, that Joshua, with wholesome regard for his enemy's "chariots of iron," had drawn attention to their existence when urging Israel to battle, which was ten years before the Bashan bruiser decided to invest in an iron bedstead.

Fifty-five years before Christ the ancient Britons exported iron to the continent of Europe in their own ships. Sixteen hundred and seventy-seven years afterwards, if the red men of Virginia had not scalped the manufacturers, America would have shipped to England home-made pig-iron from her own furnaces on the James River. So much for its ancient uses and abuses, but do you know technically what iron is? At Yale College there is, or was, a meteorite which fell in Texas. It weighs about 1,500 pounds. It contains 92 per cent. iron and 8 per cent. nickel. This is *native* iron. There are several natural combinations of iron, but, we of the Menominee Range take little interest but in one, namely, that composed of iron and oxygen, and of this only the following varieties have any material significance:

1. MAGNETITE.—*Magnetic Iron:* Chemical composition, iron 72.4, and oxygen 27.6.

2. SPECULAR IRON ORE.—*Hematite:* Chemical composition, iron 70.03, and oxygen 29.97, color ranging from deep red in earthy ores, to iron black and steel grey in the purer varieties. Variations of this are numerous, all more or less valuable, including Red Hematite, Specular Iron, etc.

BROWN IRON ORE.—*Limonite:* Chemical composition, iron 60.0, oxygen 25.6, and water 14.4, varied by silica, alumina, or phosphoric acid. A valuable and abundant ore of iron. Its varieties are: Bog Iron Ore, Brown Hematite, etc.

In 1890 the total production of iron ores in the United States was in round numbers 17,300,000 tons. Of this the *nine* iron ore producing states of the South furnished

2,917,529 tons only; the superior iron fields of Michigan and Wisconsin, supplying more than one-half of the whole output, namely 9,003,701 tons, of which again the Menominee Range contributed 2,282,237, or within a fraction of one-seventh of the entire year's product, or only 600,000 tons less than did the nine iron ore producing states of the South combined! This, however, is a mere statement of facts, and though interesting as such, conveys little import as a statistical comparison, unless we search for the lesson it conveys. You ask, "What is the lesson?" I will show you. For a year or two past the commercial world has been bombarded with printed descriptions of the alleged unexampled development of the mineral resources of the South. Is it not about time for the Menominee—the banner iron range of Superior—to challenge these assertions by a presentation of fact? Statements uncontradicted, like the conditions consequent upon unenforced statutes, sooner or later are recognized as law. Let me hasten to codify then the law of facts.

In 1880, the joint States of Alabama, Georgia, North Carolina, Kentucky, Maryland, Tennessee, Texas, and the two Virginias—I quote from a paper on "Southern Industries" which appeared in a recent number of the *Manufacturers' Record*, over the signature of Major R. P. Porter, superintendent of Census—unitedly produced 754,614 tons of iron ore. In 1890, or ten years after, their output was, as so stated, but 2,917,529, or an increase in ten years of about 388 per cent. only. What was the Menominee Range—the unknown region, on the ragged edge of the *ultima thule* of trade limits—doing in the meantime. Asleep? No! In 1880, though her output of iron ore was only 524,735 tons, or but little more than *two-thirds* of that of the *nine* ore producing states of the South, her annual output ten years afterwards—gradually increasing with the diminishing decade—had reached in 1890, 2,282,237 tons, an increase of 430 per cent., as against the 388 per cent. of increase acquired by the nine unparalleled, but "musing" southern ranges in the same period. And not alone this. In 1890, seven of these states, —I omit Maryland and Texas—had in forty cities (counting only those of over 8,000 inhabitants each) an aggregate urban population of 1,105,390 souls, representing a little less than 2⅔ tons of ore, of her per caput town inhabitants, whilst remote Menominee with its unfledged industries, and its new made population, *rus et urbs*, aggregating all told only 25,000 people, turned out over 91 tons per head of its total inhabitants, or based on its urban population, over 150 tons per capita.

In which of these—to each other somewhat antipodal places—would you, possible capitalist, prefer to invest your funds, and you skilled artizan, prefer to cast your lot from an iron ore industrial standpoint? Within the heated boundaries of nine southern states, the joint scattered area of which exceeds 577,000 square miles with a city population of over 1,100,000 and a yearly ore production of 2⅔ tons per head only, or in a more temperate district whose area is 2,000 square miles, whose city, town and village population is as yet but 15,000, but whose output of ore, from its centralized ranges, actually allows over 91 tons per capita for its civic and rural population both included, and is the base of future supply of iron for all of the expanding territory included in the entire group of states north and west of its own line of latitude. Which of these latitudes think you presents the most attractive field for commercial opportunity? The one whose "land development" companies have of recent years so "boomed" an unnatural industrial maturity, that it is already experiencing the reaction born of a

plethora of factories and a glutted market, or a country which, whilst its resources are practically inexhaustible offers an open field for the establishment of industries, and is still waiting to extend a valuable welcome to its first trade trespasser.

A Baltimore trade paper is authority for the statement that on the line of the Norfolk and Western Railway in Virginia there were, last year, completed or under contract 12 blast furnaces, 8 rolling mills, 38 foundries, 85 wood working establishments, 43 iron mines, 2,600 coke ovens and 151 other industries. I venture to predict that within five years from now this southern industrial inflation, will, in obedience to the inexorable law of supply and demand, have reached its true commercial apogee, and that a substantial per centum of its present redundant industries, will like the "Birnam woods," be marching in hot haste to the more inviting trade sanctuary presented by the solid Menominee.

Referring to this phase of over production this is what *Mining and Engineering* recently had to say upon the subject:

> The fundamental cause of the existing situation has been the competition of the southern furnaces. A large number of these, *erected solely to form the nucleus of a town site boom*,* having fallen into difficulty during the financial stringency of the past months, have been pouring iron into northern markets at almost any price, in order to raise money to meet their obligations. There is no competition as severe as that of a bankrupt concern, and some of the southern furnaces are certainly not strong financially.

This chapter was commenced with a reference to the iron bearing ores of the Menominee. The class of its ores have been described to you, I submit on page 46 as an instructive study a table showing in detail the yearly annual output of all its Mines, since its creation as an active range, deducing obvious inferences. I will then show, 1st the multiple uses to which iron can be applied; 2d, the inevitability of the world's accelerating demand for iron; 3d, a personal introduction to the shafts and levels from whence this raw staple of structural advancement is obtained, later on referring to certain mines separately, and finally drawing your attention to the opportunities which the Menominee presents for the manufacture of the crude metal and the establishment of cognate industries.

In order to further demonstrate that not only is the Menominee without parallel as regards the mines operated by our neighbors to the south, but that it has eclipsed with its production the output of the oldest—and until recently the best known—iron range of America, its twin brother, the Marquette Range of Lake Superior, the following figures obtained from official sources will prove. In the similar period already given in the preceding case of the Menominee—viz: thirteen years—the Marquette Range with a string of 82 mines, operating as one mine for 503 years, or 503 mines for one year, produced 22,098,990 tons, or at the rate of less than 44,000 tons per mine each, per year, as against the 50,000 odd tons similarly produced by bountiful Menominee.

Now this is true. What are you going to do about it? Don't you think some of this ore is worth retaining at its cradle—worth detention by a manufacturer's capias—at Norway, Iron Mountain, Florence, Crystal Falls or Iron River? Think it over, whilst I point out the superlative qualities of the Menominee product.

*The italics are mine.—W. R. N.

TABLE

Showing the Iron-Ore Production in Tons, of the Mines of the Menominee Range, from the date of their first operation, up to December 31, 1890.

Transcribed with slight additions, but with acknowledgments, from the Cleveland *Iron Trade Review*.

NAME OF MINE.	Prior to 1878	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	TOTALS.	YEARS IN OPERATION.
ARAGON													1,745	46,609	48,356	2
ARMENIA													50,275	26,649	76,924	2
BETA										1,585	1,226				2,811	2
BRIER HILL						10,593	4,388								14,981	2
CALUMET						5,847	29,239	3,627							38,713	3
CHAPIN				34,556	134,521	247,506	265,830	290,972	157,455	198,865	336,128	290,871	518,990	742,813	3,218,543	11
COMMONWEALTH				9,643	97,410	115,862	21,498	34,622	42,947	51,189	56,609	61,818	108,515	116,786	717,344	11
CORNELL										4,566	2,064				6,630	2
CRYSTAL FALLS						1,341								3,974	5,315	2
CURRY			12,803	21,851	17,534	13,374	3,676	10,079	4,897			5,376	27,722	72,162	190,474	10
CYCLOPS		6,028	46,158	14,368	12,614	16,287	22,675	24,599	49,597	37,189	14,297	14,693	6,101	7,361	273,797	13
DELPHIC							3,410	508	9,880	17,648	2,272				33,718	5
DUNN											24,677	118,096	151,828	156,968	451,559	4
FAIRBANK						8,045	455								8,500	2
FLORENCE				14,143	100,501	160,155	40,232			8,240	79,399	142,585	196,259	218,570	960 065	9
GREAT WESTERN						587	22,825	20,716		22,267	23,239	21,860	38,454	72,546	222,488	8
HALF AND HALF													5,961	1 496	6,457	2
HAMILTON ORE CO										872	600	8,801	8,347	17,072	35,692	5
HERSEL														955	955	1
HOLLISTER														2,020	2,020	1
INDIANA						4,280	4,362	636	2,789	5,854					17,871	5
IRON RIVER						29,115	100,369	52,584	58,693	78,591	83,018	110,000	179,238	155,458	844,066	9
KEEL RIDGE				11,496	19,511	23,425	5,034								58,965	4
LUDINGTON				8,816	3,374	52,152	102,682	101,165	124,194	74 454	101,653	61,883	116,297	97,355	843,975	11
MANGANATE														6,844	6,844	1
MANSFIELD														18,303	18,303	1
MASTODON						3,477	18,577	18,187	11,737	41,640	48,792	51,463	63,511	66,526	323,910	9
METROPOLITAN						23,854	36,643	27,577		6,398	9,070	3,490			107 027	6
MILLIE (Hewitt)					4,352	9,500	7,516	7,927	4,627	5,517	1,163	11,124	12,274	39 232	103,254	10
MONITOR													12,348	31,139	43,487	2
NANAIMO						2,480	29,221	37,620		5,400	30,460	5,714		3,441	114,366	7
NORTHWESTERN							7,202	10,004							17,206	2
NORWAY		7,276	73,519	198,165	137,077	165,547	114,836	71,710	67,741	98,878	95,726	87,260	68,044	61,717	1,242,496	13
PAINT RIVER						6,515	5,971	11,652	2,373	13,933	10,240	12,506	32,700	62,654	158,546	9
PERKINS			13,425	49,196	60,406	73,648	76,514	38,120	18,020	12,852	10,834	16,684	12,354	11 971	409,067	12
PERRY							3,138								3,138	1
PEWABIC														26,991	26,991	1
QUINNESEC		25,925	41,951	52,436	43,711	44,240	21,676	16,955	14,110	13,442	6,585	2,249			283,323	11
SELDEN										790	1,302				2,092	2
SH'L'N & SHAFER (United)						15,948	4,334	6,774		14,282	2,377	10,986	11,885	60,133	126,169	8
SHERIDAN													1,102	595	1,697	2
SOUTH MASTODON												2,722	4,005	1,476	8,203	3
STEPHENSON			798	23,089	10,856					1,018	3,589				39 350	5
STURGEON RIVER											6,829	7,800	4,775		19,404	3
VULCAN	4,593	38,799	56,975	86,976	85,274	94,042	79,874	101,722	124,125	143,930	205,036	129,541	153,900	104,996	1,409,784	14
WALPOLE											1,740	900	9,614	2,940	15,194	4
YOUNGSTOWN						6,198	15,292	8,344		25,635	34,418	12,699		44,460	147,046	7
TOTAL	4,593	78,028	245,672	524,785	726,671	1,186,018	1,047,868	895,634	690,435	880,006	1,199,348	1,191,097	1,796,764	2,282,237	12.669,496	258

FORTY-SEVEN MINES IN ALL.

NOTE.—Deducting, in the case of the Vulcan, 4,593 tons mined prior to 1878, this gives an annual average output for one Mine in 258 years (or for 258 Mines in one year) of over 50,000 tons.

In a special circular which I addressed to Me. nee mine owners, the following questions among others were asked:

No. 18. How do the ores of the southern states compare with those of the Menominee Range? What is your explanation of the statement current in some quarters that the ores of the mines of Virginia, Alabama, etc., are gradually occupying the markets, to the growing exclusion of the Michigan product?

No. 19. If under present conditions they are competitors to be feared, in what particular do they possess an advantage. If not in possession of superior ore, a solution of the question must be sought either in the matter of royalties, labor, or transportation. I seek an expression of opinion from you, and a suggested remedy.

The answers received may be summarized as follows: Those ores of the Menominee which correspond to the ores of the South, are here thrown on the dump. Southern ores are lower in iron and higher in phosphorous. There is no possibility of any southern competition in northern Bessemer ores. Proved by the fact that the product of Menominee mines is constantly shipped to Birmingham, Ala., and other places. Our non-Bessemer ores are certain to hold their own against those of the South, the latter being taken mostly from surface deposits. When the cream of southern ores is gone, which is only a matter of a few years, they will lose their temporary advantage. It will be a repetition of the history of the mines of central Pennsylvania west of the Susquehanna.

RAND DRILLS—4TH LEVEL LUDINGTON MINE.

The irons of the south are in many cases really mined at a loss. The companies which control them making their profit out of the sale of lands and town lots. When these cease to be realizable the ledgers will show contra balances. These pleasant looking balance sheets embody as a rule the profits made on joint and kindred industries, not on iron or even coal alone, but largely in land. There are three or four salient features, however, which must be regarded as advantageous, and these chiefly are: Absence of (1) Royalties; (2) Cheap Labor; (3) Cheap Freights, and (4) Proximity of Coal.

As to *Royalties*, they are regarded in the North by all, except the fee-owner, as in most cases a grievous imposition, and to which the legislative pruning knife might with justice be applied. The question of *Labor*, will with a cheaper food supply, correct itself. *Freights*, though they have taken a "tumble" since last season of "five cents a ton," on railway haul to Escanaba, representing a saving to the Menominee of $114,000, yet leaves much to be desired. An independent line of railway is needed. This opportunity was presented during the current year, when the Schlesinger syndicate placed their 52 miles of ironed road from Escanaba to Lake Antoine upon the market. Through lack of unanimity, or cash on the part of peninsula mine owners, the golden opportunity was not embraced. *Coal*, though a beneficent factor as regards the South, and whilst remote as regards source of supply from the Menominee mines, can yet be forced into profitable service on the range, and contribute to an active development of

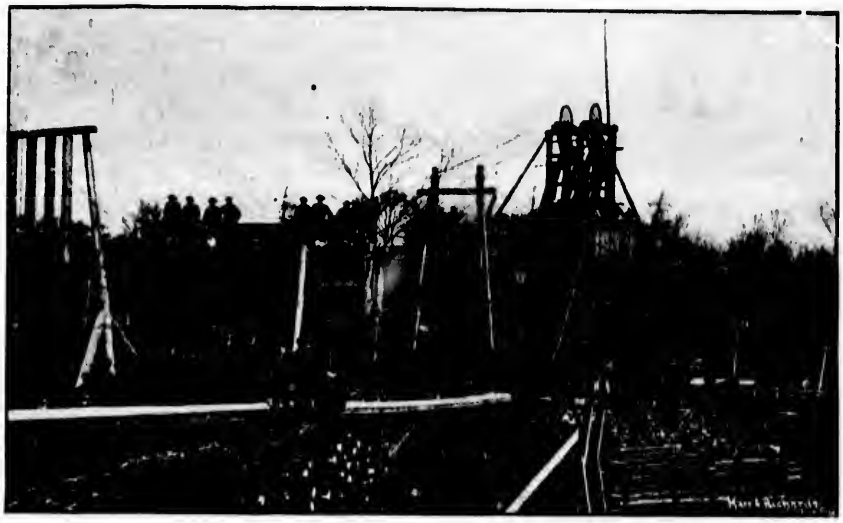
her iron industries, and lead—as I propose to prove latter on—to remunerativ competition for a share of the great northwest iron and steel demand, as yet but in it infancy. As an evidence of the actual commercial value of Michigan iron, its hat hematite, averaging 66 per cent. in iron—the state geologist says 69 per cent.— and .0 in phosphorous, was sold on the Cleveland, O., market last year at $7.25 per ton, whils soft non Bessemer ores, averaging 59 per cent. sold at $4.50.

In Alabama, according to Dr. Phillips, M. E., in his special report of the industrie of that state, it takes 2.10 tons of their ore for one ton of pig. Of the Menominee Rang ores it takes at best but 1⅓, and at most but 1½ tons to obtain the same result. "Th iron made from southern ores," so writes another authority, "contains .6 per cen phosphorous, and thus it is only fit to be dealt with in the Siemen's basic steel furnace." There are of course exceptions to this, in their brown hematite for example, which i found in pockets—uncertain as to quantity—and the Cranberry mines in North Carolina where the pig only contains about .03 per cent. phosphorous, but the ore is siliceous The ore at Birmingham, Ala., contains 40 per cent. of iron and the pig 0.6 per cen phosphorous. The local ores of Pennsylvania, New York and New Jersey are als almost all phosphoretic, much of which has to be washed. Mr. Jeremian Head, a expert who recently visited the southern iron fields has this to say upon the matte "Almost all of this erratically distributed ore is phosphoretic. What they are going t do with all the phosphoretic pig which is about to be made I cannot tell. They ar putting up foundries and pipe works and so on, but without the Basic process to enabl them to turn some of it into steel, I cannot see where they are going to dispose of it. I looks in many cases as though the blast furnace plants had been put down to enabl them to *sell town lots.*"

Upon an analysis of some figures at my elbow, I find that in February last out of 6 furnaces in Virginia, Alabama, Kentucky, Tennessee, Georgia and North Carolina, 3 were out of blast. The Menominee invites the idle manufacturer to illumine with his fu nace lights its hills, pregnant with trade possibilities and which are waiting to be arouse into a sense of their industrial responsibilities.

The growing uses for which iron and steel have been considered to be applicable have now passed out of the realms of fancy into the region of accepted fact. Possibi ities which but a few years since were regarded as remotely contingent are no substantially present realities. Iron to-day, literally, enters into our very souls. F architectural purposes iron and steel have supplanted wood almost entirely. F telegraph and electric wire poles, rods and girders, and construction work of eve description, the king of metals is employed. The demand for steel plates and forgin is phenomenal. There are at present seven companies which control the steel trade the United States. Their annual capacity for rail making is about 2,600,000 tons. La year the Illinois Steel Co., of Chicago, the most extensive concern in the countr purchased during the year, 3,642,660 tons of iron ore. It employed 9,648 men per d during the year, and paid out in salaries and wages $6,893,416. It drew a deep draug on the Menominee. In Chicago alone, the world's fair and its consequent constructi of sky scraping buildings, will necessitate an additional supply of steel. Modern scien is the science of steel. Professor Brickmore estimates the annual consumption of sleepe —I, of course, refer to railway ties—at 85,000,000. Another authority states that

...ese, there were 516,000,000 of these on our railways. The average life of an oak tie ...hilst about eight years in the Northwest, is but three years in the Southern states. As ...on must sooner or later supplant the use of wood—I mention this to encourage my ...ginia friends—their phosphoric pig may after all, find its level in ties. On the ...hores of the Pacific coast I have seen wooden piles rendered useless in six months from ...he fanatic zeal of the teredo worm, the submerged columns perforated, like a tin ...strainer. Already iron piles have been subjected to a process which enables them to ...esist the rust of salt water. Ten years from now in certain localities nothing else will ...e used. The iron fever will become practicably endemic. Whilst beef, extract of hema...tite, and wine may not enable you to resist all the ills that flesh is heir to, the steel shell which sooner or—I trust—later may envelope your remains, will doubtless preserve your



THE DUNN MINE.—CRYSTAL FALLS DISTRICT.

inanimate ashes until the last trump. All is steel. From the electric dispatch which overthrows dynasties to the brads in your boots; from the baby's safety-pin to the Krupp gun; from the blade which drips in conquest over your landlady's beefsteak, to the blade which propels the cruisers of destruction, or shears your cheek; from the locomotive which waltzes off with the amazed bride, or bears the argosys of wealth from remote spheres—to the flexible corsets which embrace the sweetest women in the world, all are of steel. In its multifarious uses, steel can be compared on grounds of adaptability to an elephant's trunk.

About 1,500 tons of iron wire is yearly manufactured into pins in England. The Newhall works in Birmingham make 10,000,000 pins per day. A bar of iron one foot long and one inch square, cast from Menominee ore will bear 5,781 pounds strain without breaking. A cubic foot of wrought iron weighs 486¾ pounds. The specific gravity of malleable iron is 7.6, and one square inch of it will sustain a weight of 17,800 pounds

without permanent alteration. If iron conserves but little of its strength by rest, it loses little energy by use. The perusal of its qualities may tire you out; iron itself never suffers from fatigue. The question of a durable road metal is one that must ere long occupy the attention of the street commissioners. In England, the casting of blocks of slag for road beds and coarse structural purposes has been seriously considered. Iron cars are gradually replacing the older fashioned ones of wood. About 8,000 of these are now traversing the railways of America. The present consumption of railway cars is 100,000 per annum, and the life of a wooden car is at most but ten years. Of the 23,467 vessels comprising America's merchant marine, 644 are of iron and steel. A Michigan fresh-water iron steam barge, the now celebrated whale-back Wetmore, recently carried from Chicago to Liverpool 95,000 bushels of wheat, without breaking bulk. This could not have been accomplished by a wooden vessel.

The story of the advances made in the utilization of iron for purposes hitherto consecrated to wood, reads like a letter from wonderland. The very ore itself in its converted form, returning like the prodigal after passing through the fires of rude experience to the parent roof, there to sustain with its developed strength in the shape of steel girders, the grim, worn out chambers of its native mine. At Cannock Chase in Staffordshire, 12,000 girders and steel pit props have, so says *Iron*, (London, England) recently been introduced in the collieries there in place of wooden ones.

"The most extraordinary and persistent increase in the use of iron for other purposes than rails, is a phenomenon of no trifling importance"—says the *Engineering and Mining Journal*—"it indicates the progress of a revolution in constructive methods, or a tremendous increase in the wealth of the people, or both. We are inclined to believe both causes contribute to the result."

So much then for the uses of iron, and now a word or two as to its compounding demand. In order to divorce the subject of any suspicion, even of doubt, I must ask your forgiveness whilst I slate you with a quota of uncompromising statistics. Before making a break, however, in this direction, I would anticipate the—to some people—apparently unanswerable statement of fact, and which is sure to menace my contentions, that the production of iron ore in the states of America was greater during the year 1890 than the demand. In explanation of this ore dilemma, which in no sense interferes with the principles of trade, and is a commercial interruption, whose recurrence in connection with the traffic in all staples not absolutely necessary, is periodically inevitable, I would simply say that the consumption of ore was short of the home production—based on the data at my command—by the amount only of the ore shipped to us from foreign countries. Of the iron ore imported during the fiscal year, ended June, 1890, it exceeded in value that of the preceding year by $908.056 (Treasury Department Trade Report 1891). Whilst we have suffered from a declining market consequent upon a reputed increase in production over consumption, the fact must not be lost sight of, that the quantity of pig-iron which actually went into consumption was 1,200,000 tons more in 1890 than in 1889.

To assist in reaching a clearer understanding of the immensity of America's iron and steel industries, and as a key to further remarks on the subject of acceleratin

demand, with which the Menominee is so indissolubly connected, I append without apology a summary of her trade for the year 1890.

	NET TONS.
Production of pig iron	10,307,028
Production of bar, rod and hoop iron	2,208,880
Production of bar, rod and hoop steel	1,235,970
Plate and sheet iron, except nail plate	505,642
Plate and sheet steel, except nail plate	401,537
Production of all rolled iron and iron nails, excluding rails	2,804,829
Production of all rolled steel and steel nails, excluding rails	1,829,247
Total production of rails	2,111,544
Production of steel ingots	5,786,061
Production of all kinds of crude steel	4,790,319
Production of iron blooms	30,783
Total production of nails, 100 lb. kegs	8,776,857

Value of imports of iron and steel	$44,540,084
Value of exports of iron and steel	$27,000,134

	GROSS TONS.
Imports of iron ore	1,246,830
Domestic production of iron ore	18,000,000
Shipments of anthracite coal from the mines	35,855,175
Total domestic production of coal	140,022,264
Iron and steel ships built	63
Miles of new railroad completed	6,344
Total number of miles of railroad, December 31	167,741

Iron, the leading metal trade journal of Great Britain, thus refers to the reversals of the position as regards the iron and steel industries of the two countries.

The quantity of pig-iron made in the United States has, in fact, more than trebled within the last twelve years, and more than doubled within the last six. Such a rate of progress is absolutely unprecedented. Compared with such strides as these, the progress made by Great Britain must certainly be regarded as slow. *It has taken us twenty-seven years to double our production*, and, indeed, we have not been able quite to maintain the figures reached in 1881-3. Moreover, we are now unable any longer, whilst admitting the relatively greater progress made by the United States, to point to the fact that we are still absolutely the greater producers of pig-iron, for there can be no question that last year America made a far larger quantity of pig-iron than did Great Britain. The official figures of the production of this country are not yet published, but the output may be taken as about 8,000,000 tons. In 1889 it amounted to eight-and-a-quarter millions.

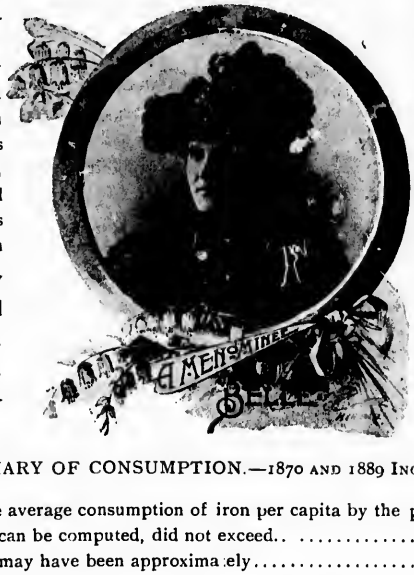
I would here note a co-incidence. The production of pig-iron in Great Britain in 1890 was less than that of the United States by 1,200,000 tons, or by precisely the same amount that the consumption of pig-iron in this country in 1890 was in excess of its consumption for 1889.

In 1856 the Hon. Abram S. Hewitt, the universally known iron-master, in a treatise on the world's consumption and production of iron, made this wonderful forecast:

It is plain that the consumption of iron is rapidly on the increase, as well from the progress in the arts of life, as from the increase in population, and the steady march of christianity and civilization." * * * This consideration has an important bearing upon the iron making resources of the world; for if it were as highly civilized as Great Britain, mankind would consume as much iron per head, viz: 144 pounds which would make a total annual consumption of about 60,000,000 of tons, or nearly seven times the present product. * * * It is apparent that when it reaches this point, the annual consumption of iron will be over one hundred millions of tons, for it is to be remembered also that the annual consumption per head has been increasing; that in 115 years it has increased seventeen fold. If the next century should show the same result, the consumption would be 300 pounds per head, requiring an annual make of 140,000,000 of tons. But the population of the world in 100 years will be probably nearly doubled, which would raise the consumption to over 200,000,000 of tons per. annum. * * * Common sense stands apalled before these immense figures. Previous to this investigation I have never allowed myself to look the facts in the face, and I am therefore desirous to submit them to the severest examination. Let me ask you therfore to measure the future carefully by the past.

From 1740 to 1885 the production of iron increased seventy-fold. If the same rate of increase should prevail for 115 years to come the annual make would reach 490,000,000 tons, and it is to be observed that the ratio of increase has been an increasing one for each period of ten years since 1740, and not a decreasing one. Commencing with 1806, it required till 1824, a period of 18 years to double the production in Great Britain. By 1836 it was again doubled, requiring a period of only twelve years. In 1847 it was again doubled, requiring eleven years. In 1855 a period of eight years, it had risen from 2,000,000, to 3,500,000, at which rate it would double in ten years.

These figures must be very wearying, let me lend to them a halo of romance, and introduce to you



Now if the production of the world were to double only once in twenty years, the make in 1875 would be 14,000,000; in 1895, 28,000,000; in 1915, 48,000,000; in 1935, 96,000,000; and in 1955, 192,000,000. Figures again so enormous as to defy any man of common sense to say they will be realized. And yet if any one had ventured the prediction in England in 1740, when the make was 17,350 tons, that in 115 years the make would reach three-and-a-half millions of tons, he would have been regarded as a lunatic, and told that all the men, and all the wealth, and all the mineral resources of Great Britain were not adequate to one fourth of such an incredible production.

That this prophecy up to date has been more than fulfilled I will now prove through the Hon. Edward Atkinson, one of the most eminent economists of the day, who last year in writing upon the subject, submitted the following:

SUMMARY OF CONSUMPTION.—1870 AND 1889 INCLUSIVE.

	POUNDS.
In 1870 to 1878 inclusive, the average consumption of iron per capita by the people of the United States, as nearly as it can be computed, did not exceed	150
In 1879, taken separately, it may have been approximately	200
In 1889 it was in excess of	300
In 1889 the consumption or use of iron in Great Britain, France, Germany and Belgium, did not exceed per capita	175
If there were upon the globe in 1889 about 1,200,000,000 people, aside from the population of the foregoing countries, then their average consumption of iron did not exceed per capita	11 to 12

SUMMARY IN ROUND FIGURES AND GROSS TONS.—1889.

	POPULATION.	PER CAPITA.	TONS.
United States	64,000,000	300 pounds	8,500,000
Great Britain, France, Germany and Belgium	136,000,000	175 "	10,500,000
All the rest	1,200,000,000	11 "	6,000,000
Total	1,400,000,000	40 pounds	25,000,000

Juraschek and Lexis, two celebrated German professors, also have just compiled some elaborate statistics concerning the world's production and consumption of iron. Whilst differing somewhat from Mr. Atkinson in their estimate of the consumption by countries, they reach almost the same aggregate conclusions. The figures are given in metric tons of 1,000 kilos—1,016 kilos are equal to an ordinary ton. In 1840 the iron output of the world is placed at 2,900,000 metric tons; in 1860, 7,360,000 tons; in 1870, 12,095,000 tons; in 1880, 18,385,000 tons; and in 1890, 27,146,000 tons!

The comparative production during 1890 is given as follows:—Great Britain, 8,001,000 metric tons; United States, 9,348,000 tons; Germany, including Luxemburg, 4,637,000 tons; France, 1,970,000 tons; Austria, Hungary, 925,000 tons; Belgium, 782,000 tons; Russia, 667,000 tons; Sweden, 421,000 tons; Spain, 232,000 tons; Canada, 26,000 tons; Italy, 13,000 tons; New South Wales, 4,000 tons; Switzerland, Portugal, Norway, and Turkey, 25,000 tons; Japan, and other countries, 95,000 tons. Of welded iron and steel the totals are distributed as follows:—Of welded iron, Great Britain turned out 1,954,000 tons; United States, 2,558,000 tons; Germany, 1,454,000 tons; France, 823,000 tons; Belgium, 507,000 tons. Of steel, Great Britain produced 3,636,000 tons; United States, 4,345,000 tons; Germany, 2,161,000 tons; France, 566,000 tons; Belgium, 236,000 tons; and Austria, 441,000 tons. The following table, according to Messrs Jurashek and Lexis, illustrates the comparative consumption of pig-iron during the periods mentioned:—

PIG IRON CONSUMPTION.

	Average 1880–1884.		Average 1889.	
	TOTAL METRIC TONS.	PER HEAD.	TOTAL METRIC TONS.	PER HEAD.
Great Britain	4,275,000	266 2 lb.	7,815,000	449.9 lb.
United States	4,674,000	193.6 lb.	7,840,000	284.9 lb.
Germany	3,182,000	154. lb.	4,373,000	202. lb.
France	2,164,000	127.6 lb.	1,662,000	95.5 lb.
Belgium	532,000	206.8 lb.	1,073,000	393.4 lb.
Austria-Hungary	746,000	44. lb.	941,000	51. lb.

These figures show that in every country named, excepting France, vast annual progress in the utilization of iron has been made.

From this it will be seen that Mr. Hewitt's prophesy for 1895, will be more than fulfilled. Analyzing these conditions, and pursuing the subject further, Mr. Atkinson asks:

Is it not almost certain that the consumption of iron will go on increasing in the period which will elapse between 1890 and 1900—not only in ratio to the population, but also in a measure corresponding to the increase per capita, which was developed between 1877 and 1889? Let it, however, be assumed that the increase per capita will only rise from 300 to 400 pounds per head, then the 90,000,000 of people who will occupy this country in the year 1900, may require our present supply and in addition thereto, 7,000,000 gross tons. If the demand of Great Britain, France, Germany and Belgium shall increase only 20 per cent. in the next ten years, that increase will create a demand in addition to their present consumption, for 2,000,000 tons. If the consumption of the rest of Europe, of Asia, of Africa, of South and Central America, and of Australia, shall only carry their demand from eleven or twelve pounds per capita to twenty-two or twenty-four pounds, then, in addition to their present supply of 6,000,000, they would require 6,000,000 more.

Mr. Atkinson summarizes these conclusions as follows:

	TONS.
Present production	25,000,000
Increased consumption in the United States	7,000,000
" " " Great Britain, France, Germany and Belgium	2,000,000
" " " all the rest of the world	6,000,000
Total increase of demand	15,000,000
Total supply required	40,000,000

In 1889 the demand for iron was 76 per cent greater than in 1878. * * * Is there not reason to expect the increase in the demand of 1900, as compared to 1889 to be as great as the increase of demand of 1889 was in ratio to that of 1878? In such event the supply for the year 1900 must be 44,000,000 gross tons.

But even this base of computation is not regarded by Mr. Atkinson as a complete one, for he justly adds, in order to establish a fair method of forecasting future demand:

We must compare as many periods of eleven years each with the other as the statistical data will cover in order to develop the apparent law of *accelerating demand*. * * * If then one may predicate a continuance of this law for the next eleven years, neither forty or forty-four million gross tons will suffice in the year 1900. If this increasing demand continues, the supply must be 100 per cent in excess of that which now prevails—THE SUPPLY IN 1900 MUST BE 50,000,000 GROSS OR 56,000,000 NET TONS. Who will supply it?

Yes, "who will supply it?" I make bold to answer Mr. Atkinson's most pertinent query by propounding anyway a partial solution of the difficulty when I submit in reply "THE GREAT MENOMINEE IRON RANGE!"

A Memominee Ore Carrier.] The E. C. Pope. [Courtesy of Cleveland *Marine Review*.

I have referred elsewhere to the railway system of transporting ore. A word as to the iron ore marine. From the six iron ore ports of Michigan and Superior in 1890, viz.: Escanaba, Marquette, St. Ignace, Gladstone, Ashland and Two Harbors, was shipped respectively, 3,792,006; 1,267,777; 21,501; 82,902; 1,618,206; and 880,014 long tons of iron ore. To convey these 7,662,499 tons of compact freight it necessitated nearly 3,000 cargos. To enable you to grasp the immensity of this trade, I might add that it would have taken the combined carrying capacity of the whole of America's merchant marine twice over to transport the product, representing two cargos and two voyages, for every one of the 22,428 hulls of registered American bottom. These ships are of a type distinctly peculiar to the Great Lakes. The *Marine Review* of Cleveland, has kindly allowed me to present you with a picture of the most recent addition to the United States fresh water fleet, the *E. C. Pope*, named after the eminent iron ore dealer of Cleveland, and built by the Dry Dock Co., of Detroit. The *Pope* is 314 feet keel, and 334½ feet over all; breadth 42 feet; depth 24 feet; engine, cylinders 22 inches, 35 inches, 56 inches; stroke 44 inches; two boilers, diameter, 14 feet 2 inches; length, 11 feet, 6 inches. On Sept. 2d, 1890, with a cargo of 3,109 net tons of ore, and a draft of 14 feet, 6 inches, and a displacement of 4,710 net tons with Capt. Geo. Miner—even the skipper's name is a "harmony"—in command, she ran 314 miles in 22 hours, 59 minutes, with an indicated horse power of 1357, and an hourly coal consumption of 2,632 pounds. She has since carried 3,608 net tons drawing 16 feet of water. She carried on another occasion 125,990 bushels of corn with a draft of 15 feet, 10 inches. Light she averaged within a fraction of 16 miles an hour. Such are the vessels which transport the viscera of the Menominee to eastern furnaces, bearing with them a return cargo of water-ballast only.

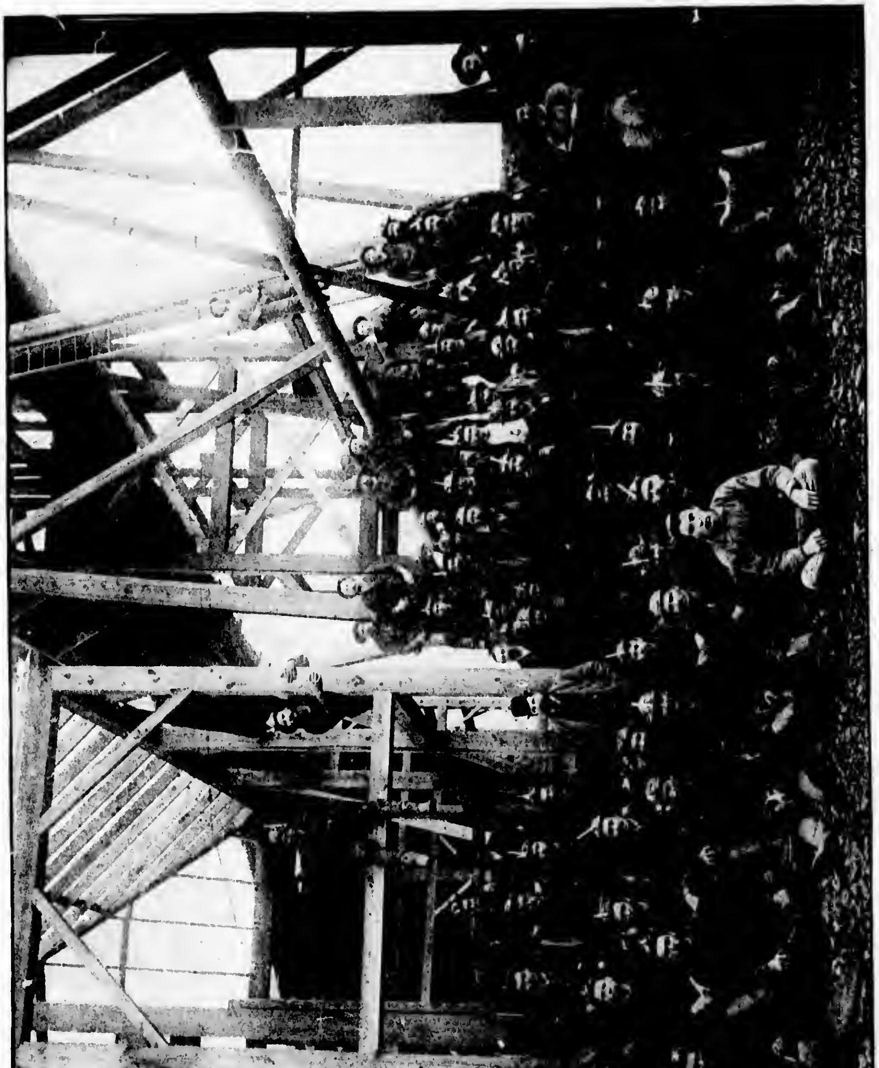
Upon reference to the summary of the iron and steel trade of this country for 1890, it will be seen that the value of our imports, exclusive of ore, is given as $44,540,084, representing over 700,000 tons of metal. This estimated tonnage, however, does not include the metal contained in the $2,831,000 worth of machinery, the $2,532,000 worth of cutlery or the $1,388,000 worth of firearms included in the total value of imports, but of the weight of which the Trade and Navigation Report gives us no return. Surely the day is not far remote when not alone will our native industries be supplying our own domestic want in these lines of manufacture, but meeting the expanding demands of foreign countries also. I find, however, an item which may be of some interest to the industrious house-wives of this range, namely, that of $267,831 for needles! Hereafter any objurgation on the part of the married miner, when he discovers he is "short on buttons," will be perfectly justifiable. A further study of the elaborate reports by the Chief of the Bureau of Statistics, Mr. S. G. Brock, at Washington, on our foreign commerce, reveals the suggestive fact that the price of pig-iron imported into this country during the last fiscal year, 1890, actually exceeded the value of the article in the foreign market from whence imported, for the preceding year, by $8.90 per ton.

I offer this as another trade nut for the American Iron-master to crack, and return with renewed faith to a further study of marvellous Menominee.

[Courtesy of Cleveland *Marine Review*.

THE E. C. POPE.

A MENOMINEE ORE CARRIER.]



Group of Officials and Miners, Aragon Mine, Norway.

CAMP OF OFFICIALS AND MINERS, ARGON MINE, NORWAY.

CHAPTER IV.

The Iron Mines of the Menominee Range.

Facts and Fancies.

The mines of the Menominee Range last year produced jointly, as already shown in detail, 2,282,137 tons of ore. The aggregate output of the 96 mines in active operation during the calendar year 1890, throughout the whole Lake Superior region—according to the statistics as prepared by the *Iron Trade Review*—amounted to 9,003,701 tons. Of this total the Vermillion Range in Minnesota produced 880,014 tons, the other three ranges supplying the difference of 8,123, 687.

It is possible there is an error of a few thousand tons, for in a manuscript statement forwarded to me by Mr. S. G. Brock, Chief of Bureau of Statistics, Treasury Department, Washington—and whose courtesy I beg to acknowledge—taken from the annual statistical report of the American Iron and Steel Association, I find that the Vermillion Range is credited with 880,264 and the Lake Superior mines of Michigan and Wisconsin with 8,132,115, raising the aggregate total by 8,678 tons. Practically this of course has no more effect on the result than has a mosquito on a fly wheel.

Of the 178 mines in the entire Lake Superior region in operation off and on since 1878, I find that they represent for the period of thirteen years, 900 mines for one year, or one mine for 900 years, with an average annual production of 51,090 tons. During this period the smallest output by any one mine was the Wheeling of the Marquette Range, 74 tons in 1887, and the greatest that of the Norrie, Gogebic Range, 906,728 in 1890. The further detailed consideration of the individual mines of the range, I shall leave to be dealt with in the chapters descriptive of the towns within whose limits they are situated or to whose markets they are tributary.

In a publication of this nature I am sure that you have no desire, and I assure you I have none, to enter into all the sombre mysteries of mining as a science of technicalities. Probably all that you care about knowing, non-scientific reader, now that your appetite for wealth has been whetted by a display of Menominee mineral, is the shortest and most practical way of reaching the base of supply, the birth place of iron—sphynx-like in its crass entity, yet typical of all things durable, unfrangible and superlative. As you have been told, there are 47 mines in the Menominee, which gasp at you with their black mouths, like the jaws of Jonah's whale in Dorès' painting, and at intervals, from Waucedah to Crystal Falls. These mines are "run" for the most part, by very estimable managers, and I have a diffidence in taking you down one instead of—not in preference to, mind you—another, for fear the united management of the 46 unvisited industries, might traffic with a pit-boss to smuggle me into obscurity. However, I'll

run chances and as the Iron Mountain mines are within rifle shot of where I this day sit. I will elect to conduct you into one of its many shaft houses, conditionally that under no consideration will you be seduced into divulging the name of the mine into whose cold crypts I am about to lead you.

On the side of a hill, at the base of its second bench, and which hill, carved and chopped up, like the drop curtain in a Chinese theatre, reaches skyward some 250 feet, stands a brown red shaft house, at whose entrance several hundred men are lounging in every conceivable attitude of repose that happens to constitute their idea of rest. These men with hardly an exception are costumed in the picturesque and serviceable outfit of their calling. Sou'-Westers, oil skins and knee rubber boots, an army of stalwarts in their uniform of rust. In each hat is either an iron stick holding its yellow stearine candle, or a small tin oil lamp, all lighted, the flames of which wave diversely in the faint pulses of air that reach the place. Every man who is not smoking is chewing. The rays of a setting sun salute the group from over the hilltop, and lighten up unnecessarily the sea of smiling faces with halos of hope. This is the night shift. It is quite possible that one or more of their number may be now drawing his last "surface" breath and bidding an eternal farewell to the sunshine. God knows best. Not a trace, however, of any such impending possibility finds outward reflex. The ringing of the bell at the pit-mouth, signal of a descending cage, might be the pealing of wedding bells instead of a summons into the presence of abysmal risks.

If you are any kind of a "decent chap" at all, you will probably say to this multitude of humans as you approach them, "Good day, boys," when in secular imitation of the tongues which were loosened at Pentecost, you will probably be greeted thus:

"How'dy,"
"Good day, partner,"
"Bon jour, m'seur,"
"God dag,"
"Buon Giorno, Come và."

Of the thousands of men working in these mines, about one-third are English, one-third Swede, and the remainder Hungarians, Russian Finns, Poles, French, Germans and Italians. The Cornish men as a class make the best miners. The Swedes, after a trans-atlantic experience, ranking next.

At the captain's office you have changed your "outfit," and are now attired in a creaking uniform of rusty oil-skin. The cage is waiting for us and the men beckoning.

Yes, come along. Fourteen hundred feet of a drop. Deeper than some shafts, but shallow compared with others. The Belgian coal mines at Fleau are 3,700 feet. The silver mines at Adalbert in Austria are 3,279 feet deep. The copper mines at Calumet in Michigan are nearly 4,000 feet deep. These shafts are gloomy as Erebus, the only light that reaches you being the fitful flicker of your candle, that sways in its stick, and brings out the cavernous shadows into more tangible and almost audible blackness. As you drop lower and lower, the feeling grows stronger, that whilst *you* are stationary, the *walls* of rock are rushing by you chasing the timbers that hem you in, in a mad frantic race to the surface, a diminishing port-hole above your head, and through which hatchway, that appears to frame a bit of heavenly blue night-shirt, buttoned with auriferous stars, you beg that a watchful divinity will permit no careless vandal to drop a twenty-

pound crowbar. Stories are told you of how men have fallen hundreds of feet down such shafts and survived the shock, and again of others who have not dropped a tenth of the distance, and yet been reduced to a jelly. Out of the 140 accidents in the 15 mines within the county of Menominee, during 1890, and out of 4,012 men employed, there were but 20 fatalities. Eight of these were caused by falling down the shafts, from 18 to 1,300 feet; seven were from falls of ground. A verdict of accidental death being returned in all cases. In his last annual report, Mr. J. B. Knight, County Inspector of Mines, makes this reference to the important question of responsibility:

"I have been criticized because I did not place the blame for every casualty upon either employer or employed. We must not lose sight of the fact that despite the greatest efforts and the use of every safeguard known to the industry, the element of danger can never be eliminated from mining, and I should be wanting in common sense to attempt to place responsibility on human agency which belongs to a higher power." Mr. Knight is right. The miners neglect however is usually accepted as contributory to the result. Constant familiarity begets indifference. Neglect of personal precautions on the part of the miners should only serve to incite the management to a more watchful exercise of authority. The miner is after all but a "ward." If he neglects his own safety the vigilance of his employers should be doubled, but he should be compelled—by punishment if need be—to mend his lax ways. Bearing on all this I have one suggestion. When a jury is needed to investigate a mining accident, impanel "miners." None but an expert has any right to sit in judgment on such a case. Such a jury is the miners best safeguard, and his inalienable right.

MINERS DESCENDING SHAFT, PEWABIC MINE.

What a chamber of veiled mysteries is the low vaulted room at the bottom of a deep mine. We have reached the 14th level, more than 1400 vertical feet below the surface and 800 feet below the level of Lake Michigan. Big drops of water fall from the rocks above—small streams in places—and tumble with a suggestive splash into the awesome pools at your feet, whose terrors are magnified by the cut shadows of jasper buttresses which seem to be shutting in upon you like the iron walls of an inquisitor's vault. You are now in the heart of the great Menominee ore deposit, which from its extent, regularity of occurrence and purity of ore might be called a vein. These beds sometimes get pinched out, and faults or failures occur, but even so these waves of iron stone often

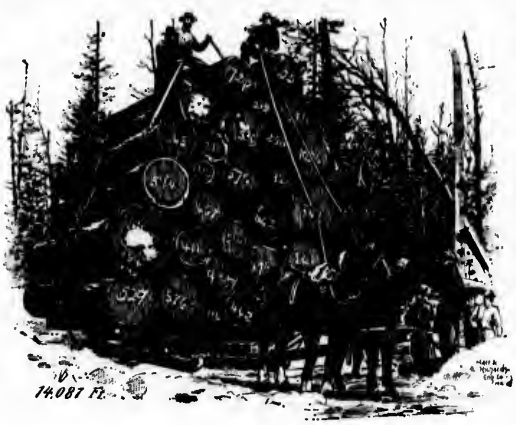
overlap and the dropped skein can be picked up and followed. Sometimes these lenses of ore will be scattered like huge lima beans crystalized in this basin of metalliferous soup. Again the deposit will run in shape like a gigantic warped leather strap, or a congealed wave having a lateral motion, again disparting and becoming like a shoal of enormous fish, or a mammoth subterranean pudding with the lenses of ore in the place of plums, the width of the deposit ranging from five to eight hundred and even one thousand feet.

Here as you leave this chamber and enter a drift, moving east, you pass through some 60 feet of an ore vein on the way to a winze, a smaller shaft, up which you can by numerous perpendicular ladders mount from level to level, until you gain the surface. This plan however, this toiling upward, is wet, risky and laborious, and after four or five hundred feet of a climb is probably abandoned for the more exciting bucket. The interior of a mine is full of surprises. A wall of impenetrable blackness stares you in the face; progress is barred. An unusual effort on your candle's part reveals a turn, trembling you grope your way round the barrier and suddenly a weird tableau confronts you. Silhouetted against the jasper walls stand a group of miners. Exaggerated and theatrical in the fitful light—the red and yellow of stearine and coal oil—you scan a page from the inferno. These men are blasting and are now placing in position the fuses of dislodgment. The cry of warning reaches you and whilst you yet wonder, a hoarse shout in your ear and a grip of steel about your wrist and you are hurried out of reach of harm behind the shelter of remote passages. Two fuses, ordinarily speaking, will remove from eight to ten tons. The report of the explosions reach you like muffled drums. Hasty examination shows some thirty tons of ore to have been moved, and "partner" shakes hands with "partner" on the conquest of mind over matter, and the incident is the theme of chat on that level for a day or so until some more exciting exploit obliterates it. This streak of luck is an excuse for a smoke, and under the protecting security of posts and studdles, which are bent and bellied with the millions of tons of overlying rock and ore, you can pull at your pipe safe from fire damp, and talk the lingo current in these strange, damp diggings.

Night shift men come on at seven and work till twelve, when they have an hour's spell for supper on the surface. Eight-hour men carry their "tommy" with them underground, and work straight through. A miner will mine on an average about 4½ tons a day. Last year at the Chapin it cost the company, so I am informed, $1.98 per ton to mine, which fact was attributed to the local management lacking in executive ability, but I find Mr. Birkenbine places the average cost in all Michigan of producing one long ton at $2.07. The complement of laborers to miners is about three to five. The cost of the candle to the miner is at the rate of about one cent an hour, but as we live in an age of scientific marvels electricity will soon supersede everything in the shape of a motor or a light for all mining purposes. Its general use for mine lighting is only postponed on the ground of the miners wholesome dread of its hidden dangers. Already it is utilized to drive some of the largest pumps in the world. Thompson and Van Deopole of Boston, are at the time of writing, erecting a plant for the Hamilton Ore Co., which will raise 100 gallons of water 1,325 feet every minute. The Cornish pumps in the mine I have brought you to have a capacity of 2,000,000 gallons a day from a depth of 800 feet. At the stamp works of the copper mines of the Hecla and Calumet at Lake

Linden, Mich., is a gigantic pump whose capacity is 60,000,000 gallons a day, and its consort the Winnipeg, of equal capacity is about to be put in place. In the mines of Honduras it used to take twelve days to raise 100,000 gallons, but it was carried on the backs of miners, in leather bags, up ladders of notched poles. But why continue? The resources of the Menominee are daily taxing the brains of the wisest living experts, to meet the demands of the exigencies exacted by the fabulous value of its mineral.

As you sit listening to the exciting experiences of your guide, but which after all bear no comparison with the thrilling adventures of the coal miner, the muffled sound of the steam drills working in distant stopes reaches you. The subdued noises born of this steady boring, suggests mammoth beetles, or teredo worms, or colossal moles, burrowing their unseen way through the unexplored foundations of the world, whilst the blow of distant pick and hammer possesses the place like the articulate summons of some giant death-watch, and the hiss of compressed air sings through these cold granite halls like the dirges of sirens. And it is cold. Round the nozzles of the air pipes, the ice has formed a heavy sil- ver compress, and the keen draughts which come ex- ploiting along clammy causeways chill you to your very marrow. These steam drills are a wonderful institution. With the old hand drill it will take about twenty-five min- utes to sink a foot in an ordinary vein of ore. In jasper or rock it would take an hour. With a hand drill an eight pound hammer is used, and if per- sonal observation is to be depended upon, the striker will give thirty blows of the ham- mer in a minute. Recent experi- ments in Norway, according to *Iron Age*, demonstrated that in driving a level in exceptionally hard horn-blendic gneiss by hand and by rock-drill, respectively, in a square of six feet, six inches, the cost of labor for the same given result was 70 per cent. of the total cost, as against 55 per cent. of the total in favor of the air drill. So much again for the conquests of science. The average rate of wages of miners per day on the Michigan Ranges is according to Mr. Birkinbine (*Census Bulletin*, No. 113), $2.23, and laborers $1.73, underground labor.



A LOAD OF WISCONSIN LOGS.

In the island of Madagascar, so says a Chicago man, who has recently "drummed" that primitive spot in the interest of rock drills, the miners receive from six to ten cents a day for fourteen hours' labor, and recently struck for an increase of two cents per day, and carried the point, which fairly bristled with trade complications. There are larger iron mines than those of the Menominee, but from a trade standpoint they "are not in it." The Durango Mine in Mexico claims to be a solid mountain of ore, 500 feet high, with an area of 95 acres, and an annual output of 3,000,000 tons. The directors, who met in Chicago this summer, want to sell, which is not surprising, as Durango has no fuel, and is 100 miles distant from a railway. Wonderful and perplexing Durango!

One thing especially strikes you in your visit to these sunless caves, and that is the universal look of complete contentment which appears upon the faces of the miners. A miner's vocation you might reasonably suppose would be a depressing one. The unseen dangers ready unbidden to confront the hero of the pick at any moment, instead of having a depressing influence would seem to exorcise every shred of carking care. The gloom of hanging walls casts no shadow on the pitman's face. He carries sunshine with him into cramped chambers and frowning stopes, and with a dower of rare bravery and strongheartedness, God lightens his darkness.

Other noises reach you in these joyless cells, thunder like rumblings, which the captain of the mine soon accounts for by leading you to the foot of a chute, down whose inclined plane comes thundering from a higher level, tons of blue or red ore, almost incandescent with their own friction as they bound against the swinging buffers and plunge into the iron receiving cars with the strident roar of a giant's charivari. These loaded cars are then hauled along the track on the bed of the drift by a wire rope worked by steam, and drawn bodily into the receiving cage awaiting them in the shaft at the mouth of the operating level, or emptied into buckets, which are soon hurrying upwards in obedience to the mighty hoists which have promised them a baptism of dazzling daylight. Without personal inspection little conception can be had of the enormous amount of labor involved in developing a mine, a task so herculean, which, though now performed in months, owing to the time-saving devices of the scientist and mechanic, would under less advanced conditions take as many centuries. Steam, compressed air, electricity, and machinery—in whose complex capabilities consists its simplicity—and explosives, directed by the intelligence of a higher civilization, have reduced yesterday's seeming impossibility to every day commonplace. Based on broad statement it is fair to assume that for every ton of ore mined in the region of Lake Superior at least three tons of rock and waste have had to be removed. During the last 25 years 56,459,036 tons of iron ore have been produced within the district, necessitating the removal of at least 169,000,000 tons of rock. In order to transport this huge bulk of waste, it may be of interest to the miner to know that it would load 8,500,000 of his largest ore cars, which would more than twice girdle the circumference of the earth if made up into two separate trains of equal length, and then leave a train amply long enough to bridge the Atlantic twice over. In 1889 the total capital invested in iron ore mines in the whole country was $109,756,199 and the total cost of mining $24,781,658, of this Michigan paid out $217,283 in office wages, and $6,353,741 in labor, out of a total expenditure of $12,118,541.

The various shafts of the several mines of one company alone, amount in the aggregate to a depth of 8,105 feet, whilst the total length of the underground levels, cross cuts, and drifts, exceeds 9,600 yards. Just imagine nearly six miles of these subterranean trenches. What a paradise for a Digger Indian. The work accomplished by these shaft sinkers too is something almost incredible. At the new shaft of the Hamilton Ore Co., which is 21 feet 4 inches by 7 feet within the timbers, 90 feet has actually been sunk in thirty days and the rock so excavated, hoisted 1,200 feet to the surface, the first level being 843 feet under ground. The Ludington mine which has raised this season 700 tons of ore in one day, estimates that it will be in a position to double this daily product next year with its new hoisting outfit. Obstacles which a few years ago would have

been regarded as unsurmountable are now only viewed with the interest which attaches to anything which whilst presenting difficulties merely calls for the exercise of unusual engineering skill to overcome. On the Harrison location in the town of Norway, the Penn Co. demonstrated the application of skilled engineering to some purpose when in the spring of 1890 they undertook to sink a shaft 6 feet by 13 feet, some 60 feet through a quicksand. Under the superintendence of Mr. William Kelly, the present general manager, this was accomplished. Limited space precludes all possibility of detail. An interesting paper descriptive of the work and written by Mr. Kelly was read before a meeting of the Institute of Mining Engineers at Cleveland last June. Water was struck 20 feet down, which a 200 gallon pump failed to lower. A No. 10, 400 gallon Knowles pump was substituted. A Caisson or drop shaft was constructed, 4 feet larger in every way at bottom than top, to aid its settling, and was divided into three compartments to within twelve feet of the bottom. After sinking 15 feet the pumps were started; before sinking below water level additional power was found to be necessary. Two boilers of 135 joint horse power and two No. 10 Cameron pumps were placed under the Knowles pump. At a depth of 48 ft. the three pumps were hoisting 1,500 gallons a minute. At times an additional weight of 30 tons of rails had to be placed on the caisson to keep it in place. On one occasion the pumps were drowned under, but continued the motion notwithstanding. The work of construction reads like an engineering romance. The difficulties which beset the blasting, the sealing up of the drop shaft and the timbering, bolting and cementing it with concrete were however finally overcome. Thirty-four feet was sunk through a living quicksand, and after 129 days of exciting and original work, the ordinary sinking was continued in the regular way.

ROCK DRILLING, TWELFTH LEVEL, HAMILTON MINE

The conditions are so variable in different mines, that diverse methods have to be adopted in the endeavour to obtain the greatest output at the least possible cost, having due regard for human life. The hanging walls where they are of soft friable red slate, which disintegrates an exposure, makes it costly work maintaining the openings. Above is the limestone and Potsdam sandstone, whilst underlying is the lean ore, the greenstone and the granite. Opinions differ of course as to the proper handling of the ore bed. In some mines a tunnel may be run in the foot wall parallel with the ore, and the ground cut out in sections, when drifting will be pushed to the hanging wall, and a chute made through the foot to the cross cut above, down which the rock-filling may be dumped, the ore being trammed out below. Sometimes the supporting pillars of ore have to be abandoned as well as thousands of feet of timber in the framework. Again by a system of rock-filling the pillars and the timbers may both be saved. Matters of momentous importance are forever recurring, and the brains of the resident management is continually taxed, and with few exceptions the talent in this direction is

ample. These superintendents are as a rule an unusually—and necessarily—a very bright lot of men, and what strikes the observer as remarkable—if not strange—is their comparative youth. Old heads on young shoulders. The outcome of necessity, and typical of a hot house century. As a rule they are as excellently tempered as their own Bessemer, and as inflexible in their trust as a bar of hematite. Men and masters are cast pretty much in the same mold.

In 1889, the total value of iron ore produced at all the mines in the United States, allowing $2.30 per long ton, was $32,766,506, indicating an apparent profit—over all expenses—of $34.58 per cent. It is always consequent upon such a pleasant declaration as this, that the companies bonus the superintending officials, and "set 'em up all round."

The motors in these mines are marvels of mechanical skill. Underground steam and compressed air vie for motive mastery. In one mine, and on one level, tramways nearly a mile in length are laid, where the cars are worked on an endless cable by an underground engine. Huge Corliss engines run huge Cornish pumps, which raise from lowest level to surface the life blood of the mines, whose red tor- rent from one shaft alone aggregates 730,000,000 gallons yearly. Compressed air developed nearly three miles distant by turbine wheels, on the Menominee river, and with its one thousand four hundred horse- power of apparent impalpability, con- ducted through an elevated iron pipe, drives nearly all the machinery of the Chapin and Luding- ton separate indus- tries, besides nearly one hundred Rand rock drills. Two steam engines of 3000 horse- power, a portion of the Hamilton Ore Co.'s plant, supplied by Webster, Camp & Lane, with two reels carrying 2,500 feet of flat steel rope, can hoist, if need be, from that grim depth a heavy skip with ten tons of ore added, and lower you into that weird well of "illimitable possibilities," with less vibration than would disturb a compass, and so marvellously adjusted that its loaded bucket could light on a humming-bird's egg without cracking the shell. Such are the mines of the Menominee.

TRAM CAR, THIRTEENTH LEVEL, HAMILTON MINE.

Iron Ore, of Ishpeming, is authority for the statement, that since all the mines of the peninsula were first wrought $128,000,000 has been paid in dividends, etc., which is within 16 per cent. of those declared by all the mines of the states and territories west of the Mississippi river, exclusive of the bonanza period of the Comstock mines, but outside of that phenomenal time, inclusive. These figures it says, "are to be found, and considerable time has been spent in obtaining them."

"Big profits are taken out of iron mines" says the *Boston Herald*. "The Schlesinger syndicate which purchased the Chapin mine two years ago and who paid $2,000,000 for the property, in the first year after its purchase, netted $1,000,000 to its owners." In 1890, according to the *Wisconsin*, the Norrie mine paid a cash dividend of

$8.25 per share, besides a stock dividend of 25 per cent. From a review of the Lake Superior iron ore stock market of 1890, published in the *Engineering and Mining Journal*, I clip the following instances illustrative of profit, giving a number to each mine in place of its name:

Cash value of each $25 share, December, 1890, No. 1, $160; No. 2, $110; No. 3, $99; No. 4, $75; No. 5, $70; No. 6, $60; No. 7, $40; No. 8, $35.

With this array of facts and figures, but a threadbare presentation of the commercial wonders of exceptional Menominee, I hurry to introduce you to its developing cities—very gourds of Jonah—which are now unfurling the standard of their resources, not doubting but that you may be tempted to migrate to their hills of hope, whereon they have planted for your rallying allegiance a profitable flag of trade.

TABLE

Showing the WORLD'S annual production of PIG IRON at the four periods of eleven years since 1856 to 1889 and for 1890, based on official returns, and for the year 1900, as estimated by Mr. Edward Atkinson.

Also showing the IRON ORE product of the MENOMINEE RANGE for the years 1878, 1889 and 1890, from official returns, together with a yearly estimated product up to 1900, based on an assumed annual increase of 10 per cent. and 20 per cent. respectively:

WORLD'S PRODUCTION OF IRON.		MENOMINEE RANGE PRODUCTION OF IRON ORE.	
1856	6,000,000 tons.		
1867	8,400,000 tons.		
1878	14,117,902 tons.	1878	78,000 tons.
1889	24,869,534 tons.	1889	1,796,764 tons.
1890	27,146,000 tons.	1890	2,282,277 tons.
1900—Estimated	50,000,000 tons.		

ESTIMATED ANNUAL INCREASE IN PRODUCT, MENOMINEE RANGE.

AT TEN PER CENT.		AT TWENTY PER CENT.	
1891	$2,510,504	1891	$ 2,738,731
1892	2,761,554	1892	3,022,622
1893	3,037,709	1893	3,627,146
1894	3,341,479	1894	4,352,574
1895	3,675,626	1895	5,223,088
1896	4,043,188	1896	6,267,704
1897	4,447,506	1897	7,521,244
1898	4,892,256	1898	9,025,492
1899	5,381,481	1899	10,830,590
1900	5,919,629	1909	12,996,708

NOTE.—The total increase in the production of Iron Ore in the whole Lake Superior District last year was 40 per cent. over that of 1889. In the whole of the United States the increase in production of Pig Iron for the year 1889, as compared with 1888, was 17 per cent., and for 1890 as compared with 1889, 21 per cent. In 1890, as compared with 1880, it has increased 153 per cent. In December, 1889, the unsold stock of all kinds of pig iron in the United States at close of year was 277,401 tons. In December, 1890, the unsold stock amounted to 681,992 tons.

In 1890 the production of iron ore in Great Britain had *decreased* from that of the previous year by over 6 per cent.

With the world's increasing want and Britain's diminishing supply, insufficient for her native consumption, the accelerating demand for iron ore—made imperative by natural increase of population and creation of new uses—will tax American mines to their full capacity. An estimated ten per cent. per annum increase in the output of the Menominee, is the natural increment for a decade, based on the population which her present production bears to the rest of the world.

What will the marketable product be in 1900? Six million or thirteen million tons? Either of these ultimate conditions present fortunes to all who may embark in any cognate industry in the Menominee.

Birds-eye View of Norway—Looking South.

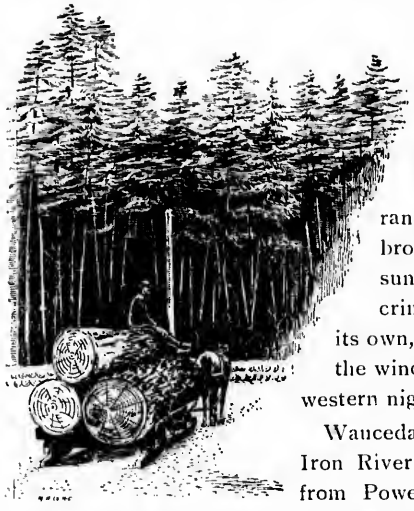
BIRDS-EYE VIEW OF NORWAY—LOOKING SOUTH.

CHAPTER V.

The Menominee Range.

Its Cities:—Their Industries and their Resources.

THE TOWN OF NORWAY.



OVER the hill-tops—through a luminous faint haze that leads to the belief that all the incense from all the censers swung by all the priests since Aaron had been blown there—over the pencilled outline of the purple iron range, through grass green tamarack boughs, and brown bark of fir-trees, come shafts of expiring sunlight. These stain the autumn leaves a deeper crimson and lend to Waucedah a glory not entirely its own, as you catch a glimpse of its condition through the window of your Pulman, as the Chicago & Northwestern night express comes to a standstill.

Waucedah is in Breen township; is a station on the Iron River branch of the C. & N-W. Ry., eleven miles from Powers, the junction of the Northern Michigan branch of the same road and 3.6 miles from Chicago, and about the same numerical amount in feet of altitude above Lake Michigan. It is north of Chicago; it is about 300 miles east of Minneapolis and about 160 miles west by rail from Sault St. Marie. These are variously well known points, hence any student of latitudes should be able without the aid of an atlas, to locate the gateway to the Menominee Range.

In 1866, the Breen Bros., as may be remembered, discovered the mine which bears their name. Its history I have followed. To-day a new shaft 160 feet deep has been sunk within thirty rods or so of the old one, alongside the original "Dublin shaft," out of which 2000 tons of blue bessemer have been raised this season. Of this, 1,500 tons have been sold to the Joliet steel works. The Loeffelholtz Mining Co. of Milwaukee are the lessees, who are pursuing a systematic exploration of the locality, and are well satisfied with the outlook.

Waucedah of course is on the extreme eastern outskirt of the range, and the apparent richness of more western points has interfered with its righteous development.

The mine referred to, which is of course but an "exploration" in the mining sense of the term, is the only shaft at present operating, and employs but a handful of miners. Waucedah's chief present claim to notoriety rests in its possession of timber limits, and farms. Over 1,500 men are employed in its winter lumber camps in which the Holmes, the Spaldings, the Kirby Carpenters, the Menominee River Lumber Co. and others are interested. Waucedah trembling on the rim of eastern civilization and western development, remains immature. It has a population of 150, a post office, presided over by the pioneer prospector Mr. Saxton, and is visited by Catholic priest and Methodist minister at reasonable intervals. It is claimed, and with sound reason, that the explorations have all been limited to surface ones, and that if the true value of its treasure is desired it must be sought at a reasonable depth below the crust. Capital and labor are both needed in the development of a mine. Waucedah consists topographically of the N. W. ¼ of the N. E. ¼ and the N. W. ½ of the N. W. ¼ of Sec. 22, T. 39, R. 28.

Waucedah is waiting to be hypnotized.

Seven miles from Waucedah by rail, in which interval you dip down over and up the valley of the Sturgeon river, noted for its speckled trout and the blue bucks which throng its forests, and you reach Vulcan. Vulcan is an adjunct of Norway town and rests its recognized claim to importance 349 feet above lake water. Here are the headquarters of the great Penn Mining Co., whose properties extend to and beyond Norway, from which it is two miles distant. The Penn properties consist of the mines purchased from the Menominee Mining Co. in 1885, the East and West Vulcan, the Norway, Cyclops, together with the Curry, Brier Hill and the Harrison. In March last the shaft of the West Vulcan was destroyed by fire. A new shaft is now being sunk which will reach the old workings at a depth of 1000 feet. You are now within the charmed circle of irondom, and evidences of the industry are universally apparent. The high grey frames of open shaft houses, or the red towers of the enclosed ones, break the outline of the hill range which extends at alternating altitudes to beyond Iron Mountain. The sky line of these broken ridges is scarred with the banderoles of black smoke which pour from lofty iron stacks, and amid a clanging of bells and shrieking of locomotives, the rattle of empty ore cars and the more ponderous roar of loaded ones, you pull up at the Norway railway station ready for an investigation of its possibilities.

The town of Norway was only incorporated as such during the present summer, previous to which it was a portion of the township bearing its name. Its area at the present time, inclusive of the township, is 5,760 acres, consisting of sections 31, 32, 33 of T. 40, R. 29, and sections 4, 5, 6, 7, 8, 9, of T. 39, R. 29. The acreage inside the city limits according to Engineer Hellberg is nine square miles, but the acres as platted are 306 only. Of the 16 miles of named streets, four miles are graded, and equipped with 10,206 feet of sidewalk. The sewers under progress, so far have been laid 1,400 feet. About 30 acres of the town plat lies on a dry level, about 60 is sandy and hilly, the remaining 166 acres being of a sandy loam with an average of ten to twenty feet above the swamp level. It is connected with Iron Mountain by telephone, and has a local exchange with 27 subscribers, the central station being located in the drug store of Mr. Patenaude, County Coroner. Its total assessment, real and personal, amounts to $420-000. It is 326 miles from Chicago, and at the level of the railway track, which rests slightly above the lower or south end of the town, is 379 feet above Lake Michigan. It

is notable throughout the state as having within its limits the oldest, and some of the most important mines on the range, including the Penn Co.'s famous string of producers, and the renowned Aragon.

From the track going west, lies upon your right the old village location, now the site of the present business centre. To the south extend the additions to Norway proper, viz.: Fredrickton, Ingallsdorf, South Norway and Brier Hill—I have wished, longed I may say, to spell that word "Briar," but no one in Norway would allow me. Scattered over the newer property are the evidences of a newer era, modern residences and the less pretentious cottages of some of the mining population. Newly graded streets streak its fallow acres, and a school house and a church or two relieve the gray greens of its distant timber-scape which flanks the butte-like banks of the noisy Menominee, only two miles to its south. Upon your right and to the north is planted, as I

THE "CURRENT" BLOCK.

say, the older town site, demonstrated in the blocks of red brick business houses which rise above the more sober frame stores and which lend a metropolitan look to Norway, which Carl Wendel, when he platted the village in the spring of 1879, little dreamed of.

A large portion of this original town site rested in a swamp, an unfilled but dried up portion of which, yet extends in a belt of about 100 yards from the depot alongside the railway embankment to the Harrison exploration, the sinking of which shaft under so many difficulties, I have referred to. From this embankment and between the points named, the plateau extends within the arc of a gigantic bow, the curve of which is formed by the bases of the hill-range which shelter the town from the north.

Within this well drained basin and partly on the ascent, rests the business portion of the town and the "Swamp Mine," whilst on hillside and summit are the dwelling houses of the "Norwegians" and the sites of the Penn Mines from the Black Hills on the west to the Brier Hill on the east, not including the Curry or the three Vulcans which

are further east still. Norway rejoices in some beautiful drives. Along the state road to Iron Mountain and east through Vulcan to the junction of the Sturgeon with the Menominee and the great falls, this well traveled highway runs a ribband of dead gold, banded on either side with the chrome green of forest, gleaming wall of white granite, the silver tissues of highland streams, scarred at intervals with the banked output of abandoned explorations—mounds of purple brown and bright heliotrope—emphasized with the ripe temptation of wild fruits and the scarlet oriflammes of autumn rowan berries. Hire a "top buggy" from Keating, the liveryman, and carry a frame with you to imprison the picture.

The origin of the name is a matter of some dispute, whether it was called in honor of the nationality of the founder, or out of respect for the monarchs of the forest from out the shades of which it was hewed, remains undetermined. Its platting, however, did not precede its shipping of ore, for in the fall of 1877, in October, the Vulcan and Cyclops shipped 4,593 tons, at about the same time that the Breen shipped its 5,812 tons from Waucedah. In 1877, according to Mr. Anton Odell, who is one of the earliest settlers, all was forest, swamp and lake, no houses, the autocratic Lake Superior Ship Canal Co. being lord of the manor. In far-sighted pursuit of the dollar the Chicago and Northwestern Railway syndicate had pushed—in more senses than one—their iron road as far as Quinnessec, and roused with the rattle of car wheels the big mallards that haunted the sequestered pools of Lake Hanbury. In 1877 came the Menominee mineral adventists, bond and free, digging here and digging there, fully determined that neither the ferruginous cliffs or their own constitution should longer be permitted to rust out. This band of true developers—absolutely distinct from the league of land developing corporations—soon smote the rich barriers to some purpose and made the janitor of these mountains of Bessemer incontinently surrender his trust. By 1880 the "400" of the literally "first families" had doubled by immigration; boarding houses sprung up, stores were established, dram shops thrown open to a thirsty public and an all round "land office business" participated in. As an instance of the prosperity of these early timers, Anton Odell is a proof. He reached the scene of action in 1877, in time to help the sinking of the first test pit at the "Old Norway Mine." His investments consisted at that time only of what, outside the lexicon, is called "horse sense" and hope. In 1888 he rebuilt the Current Brick Block, at a cost of $17,000, and this upon the ashes of the fire which had leveled the town. In 1885 half an acre of land, not far from the Aragon mine, purchased the preceding year for $250 was sold for $2,000. In 1890 seven acres in South Norway, bought for $700 in 1884, was sold for $4,000. This will give a key to values. In 1877—a range chronological peg on which to hang much data—the only and original doctor, McLeod, first filed an appearance, and probably his saw. Father Fox at the same time preached of mansions more enduring than tabernacles of hematite and doubtless paved the way for the first church and school house, built the following year. In 1878 Father Rosseau established the church parish of St. Mary. Anticipatory of these various blessings, Mr. M. Anderson, now alderman, was induced to follow the blazed trail from Vulcan—whilst the May mosquitoes trumpeted his temerity—in 1877 and also worked on the first test-pits, and assisted Antoine Lynch to organize the first boarding house. At this distance from the river the forests had yet to receive the shivering innoculation of the woodman's axe.

The only fallen trees were those prostrate with senility, or storm snapped, or felled to build the supply roads constructed of corduroy, and which led to the mines. In 1881 Mr. Anderson gave $525 for his property on Main street; it is now valued, improvements included, at $6,000.

At this time the "location" was situated in the township of Breitung. In 1881, Norway township was organized, and on April 27, 1891, the town of Norway was incorporated. In 1878, Mr. L. F. Springer, now conducting a large furniture business, reached the place, and like all of the incomers at that period sought employment in the mines. In 1878, the first saw mill on the Menominee Range was erected at Norway, by James and George O'Callaghan. Subsequently, John, another brother, entered the firm. The stumpage was purchased from the Canal Co. chiefly. From this date Norway entered upon a new era of development. Notwithstanding that the mills have been twice burned—once in 1881 and again in 1888, they are to-day, with new machinery, doing a larger business than ever. Their chief output consists of long timber for railroad bridging and timbers for the mines. Lumber runs up all the way from $10 to $35, and $40 a thousand. The capacity of the present mills is 40,000 feet per diem. The logs are hauled from one to three miles. The available pine, however, is diminishing daily, and a local yield of but five years is now left. On the general subject of the Menominee lumber trade, I shall refer at greater length elsewhere. Noble stretches of hardwood lend their valuable aid to Norway's list of industrial possibilities. Maple and rock elm at present are largely utilized for flooring, and for finishing purposes, the birch that "waves and weeps" in the thickets that hem the Sturgeon river, is difficult to equal. To the north and on Pine Creek—one and a half miles from town—there is a glorious block of 3,000 acres, covered with magnificent hardwood, and upon which there should be thriving homesteads, were it not for the policy of the Lake Superior Canal Co,, which by its conservatism places a monopolist's bar to settlement. In places, however, there are farms which would do credit to eastern districts; but as the roads are excellent, and the market for every description of agricultural product adjacent and most remunerative, there is inviting room for the granger, and he can count on a hearty reception.

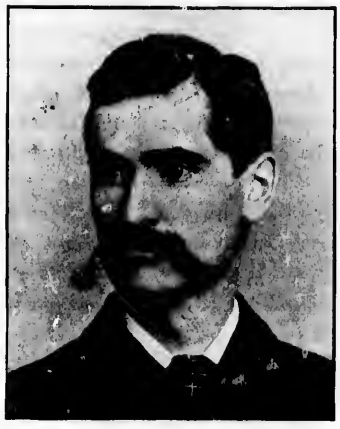
On the old state road to the town of Menominee at the river's mouth, some sixty miles distant, there are some splendid farms, many of which are operated by lumbering firms, and used as a summer resort for their stock. Here also are raised the oats, potatoes and other roots, consumed by the logging camps, and by the farm hands. But little beef is raised on the range, the most of all the meat being shipped from Chicago in refrigerator cars, and retailed by the butchers at from ten to fifteen cents.

On the S. ½ of N. E. ¼ of Sec. 15, T. 39, R. 29, are spread the fruitful acres of Lew Whitehead's Gold Hill farm, whose sloping lands rise ridgeways in the centre to an elevation which leaves Lake Hanbury a blue blanket 250 feet below. North and across the track the iron range cuts the sky line over 700 feet above Lake Michigan, from which elevation as you follow its purple green rim, the mining shaft spires from East Vulcan to Norway, split the endless walls of ether. Quartz with a showing of gold was found on the hillside, hence the name.

The farm of the Menominee River Lumber Co., known as the New York farm has been worked for the last fourteen years. It is about five miles from Norway, and has 700 acres under cultivation, and is typical of many others in this section of the country.

This year, thirteen acres produced 4,000 bushels of potatoes, the oat crop was 4,300 bushels and averaged 50 to the acre. Carrots, beets and mangold are raised in profusion. One hundred horses pastured out this summer. The buildings are modern and very costly, and 25 farm hands are kept busy attending to the crops and the stock. This year the company's logging camps are away up at Amassa, above Crystal Falls, to which place milk and other such delicacies have been shipped twice a week. Mr. Juneau is the local Laban in charge. Dotting the neighboring townships are not a few prosperous homesteads, the farm products from which find a ready sale at their natural market in Norway.

The first postoffice was opened at Ingallsdorf in 1879, with C. B. Knowlton in charge. Mr. R. M. Sampson, the present postmaster, rates the yearly business now at the following figures: Letters received, 120,000; letters mailed, 72,000; papers received, 54,000; papers mailed, 33,600. A pretty good evidence of the quality of its inhabitants. The money orders sold amount to $3,080, and the ordinary business to about $3,600 a year. In 1879, Captain John Perkins, the sitting member for Menominee in the House of Representatives, arrived in the interests of the Cleveland Rolling Co., to manage the old Saginaw mine, opened up on Section 4. This was re-named the Perkins, and 13,495 tons was shipped during the year. This same summer the first newspaper was issued, it being resurrected from the remains of the defunct *Iron Home* of Ishpeming. A hospital—the Byron N. White — named after another of the early explorers, is under the control of Dr. C. D'A. Wright, physician to the Aragon mine, and district doctor for the Chicago and Northwestern railway, and in this connection it may be well to mention that it is a fact that the management of the various mines throughout the Norway district are generously prompt in disbursing money for the safety of their men.



MR. R. C. FLANNIGAN.

In the winter of 1879–80, the village scored a notch in mining advancement by placing an electric light plant in the Norway mine to facilitate the open pit work then in progress, the first of its kind on the Menominee Range. The rays of its incandescence operated like a beacon guide, for co-temporary with its introduction, many of the now leading lights of Norway flocked to share in the wonders which it revealed, like moths to a candle, and a boom in mining development started. From this time on, business men of various callings visited the place only to cast anchor. The strangers within its gates accumulated and by 1883 had reached 3,000 souls. In 1880, Mr. Jas. H. Gee—for sometime afterward township clerk—dropped in, and established the business which has assumed its present proportions in his brick block worth $5,000. Richard Oliver came at the same time and still continues business at the old stand. John Eklund also saw there was money in it and remained to stay. In 1882 came Richard Browning; in 1883, Wm. Ramsdell arrived embarking in business on his own account in 1888, and was lately elected first treasurer of the newly organized city. All have prospered. In 1880,

Mr. R. C. Flannigan opened his law office in Norway, and by his enterprise and liberality of idea has done much to promote its stability. He was prosecuting attorney from 1880 to 1886, and is to-day regarded as one of the brightest lawyers in the peninsula, and at the head of his profession in the Range. In April of 1891 Mr. Flannigan was elected first mayor of Norway. In 1884, Mr. Geo. O'Callaghan took up his permanent residence in the town and laid out Callaghan's addition; besides this property he owns considerable realty in Ingallsdorf, for the lots in which he is finding a ready sale at from $150 to $300, located as they are within half a mile of the postoffice. In 1881, Capt. H. J. Colwell, one of the best known mining experts in the Menominee, embraced Norway citizenship with all its opportunities. The prospects at Felch Mountain were waning and he sought Norway as the securest harbor of refuge, and in partnership with Mr. Callaghan purchased 80 acres of village property from Carl Wendell, who owned the surface right as stated. Captain Colwell's opinion is entitled to respect. He has known the peninsula for thirty years and the range since its discovery, and pins his faith on Norway's mineral and industrial future. He came in 1887, with Mr. Angus in "on the ground floor" president of the Aragon Smith of Milwaukee, time agent for the Fremine, and is at present Ingallsdorf properties. derickton, Lakeside and "boom" of 1880–3 and Subsequent to the the discovery of the now prior to 1887 the date of had been a period of com- celebrated Aragon, there development came restor- mercial lassitude; with its this time property which ation of confidence. From suddenly rose in impor- had little market value, lots then held at $200, tance and worth; corner foot, with value steadily changed hands at $200 a increasing up to date. The flood of Norway's fortunes ebbed no longer. As a herald of this redun- dant prosperity came Jos. H. Rowe in 1886, estab-

MR. JAMES B. KNIGHT.

lishing in that year his hotel on Summit avenue. The great urban fire of the following year, though it laid the town in ashes and reduced his hotel to a cinder, kindly spared Mr. Rowe. His present rest for the weary, with "every modern convenience" challenges the traveller as he traverses Cyclops avenue from the depot townwards. Should you ever visit Norway—as of course you will after reading this—don't fail to call upon my genial friend "Joe Rowe."

Meanwhile Mr. James B. Knight, who had severed his connection with the Penn Mining Co. because interested in the publication of the *Current*, the editorial and proprietory responsibilities of which he assumed by purchase in 1886. That his efforts towards developing an interest in the great Iron Range by his reliable representations of the mineral out-look, have not been wasted, is evidenced by the estimation in which the paper and its publisher are held. In the management of the *Current* the proprietor is ably abetted by his popular co-adjutor, Mr. J. McNaughton, assistant editor. In 1887 Mr. Knight was appointed Inspector of Mines for the county.

In 1878 the town was demolished by a consuming fire. It was a red letter day in

its truest sense though, for bricks, mortar and masonry immediately were pressed into service, and at once imparted the metropolitan air which to-day possesses the place. I have given you an outline of its growth, let me now briefly present its actualities and possibilities.

To-day, with its tributary mines, etc., it has a population of about 4,000 people. The majority of these are engaged in mining, in farming, in the woods, the saw mill, and on the railway, and the ordinary business of the city. The streets are well graded, well sidewalked, and well drained. It is essentially a healthy place. The drinking water is at present supplied by wells, and is pure. For fire protection the adit built by the Penn Co. to carry away the surface water from the mines, yields an inexhaustible supply, and replenishes the reservoirs throughout the town, and keeps the big ditch, which flows by the Fire Hall, level full. The fire department, which is provided over by F. Alich, maintains an efficient staff. The rate of fire insurance is one per cent. The township taxes have so far been three per cent. The city rate has not yet been struck. Several lakes fed by flowing springs beautify the town. Lake Mary at Fredrickton is 100 feet deep. At Lakeview is another picturesque sheet of water. For the protection of life and property there is a small but efficient police force—two policemen under the marshalship of W. J. Bunt. The bars of the lock-up are rusty through disuse. Dr. O. M. Sattre, who with Dr. Jones is physician for the Penn Co., is also health officer, complains of lack of practice in medicine. The citizens are in disgustingly good health. Of churches there are a plethora. There is a Swedish Lutheran, a Swedish Methodist, and a Swedish Baptist; there is an Episcopal Methodist and two Roman Catholic edifices, one French and the other Italian. Mr. Bergman, Mr. Edwards and Father Reinhardt, severally look after the welfare of these congregations. The Roman Catholic church and school house stands on the lofty hill-top across the track, reached by three long flights of steps, from the railway station, and commands a splendid view of the surrounding country. The property consists of three acres, upon which also stands the church school, conducted by the Sisters of St. Francis, with Sister Cassiana in charge, and an attendance of nearly 200 children. The local Board of Education is presided over by Mayor Flannigan and consists of eight other members, viz.: Messrs. Per Larsson, D. A. Stewart, James O'Callaghan, And. Reinward, G. A. Hellberg and R. C. Browning.

Mr. S. B. Tobey is the superintendent, and aided by nine lady teachers instructs a daily average of 325 children, representing thirteen different nationalities. These, however, soon acquire the English tongue, which, by means of object lessons is quickly imparted. There are two school houses, one on Nelson street the other at the Curry mine. A new brick school house of modern design is now being built on the Brier Hill addition, at a cost of $19,000, and here Mr. Jansen is offering some beautiful lots at from $150 to $175. Here also south of the track and east and west of Main street the Sweedish Lutherans are erecting a new and handsome church and parsonage. On Main street the Hotel Husson, with its accomodation for forty guests and modern equipments, offers every convenience for tourists or travelers under Mr. Aug. Husson's management. The leading lines of trade are ably represented, and when the mines are producing at full capacity, business is booming.

Whilst no especial invitation is given to retail merchants, Norway has singular inducements to offer the managers of industrial enterprises.

It is in the centre of a magnificent section of hardwood timber, suitable for manufacture into every class of woodenware, large quantities of which are required on the range, and on which the consumer now pays double freight. Within two miles of its post-office flows the Menominee, with water ready to volunteer its thousands of horse-power. At present the nearest machine shop or foundry is Marinette or Milwaukee, to either of which places, everything has to be sent for repairs. The authorities offer a *free site* for the establishment of such an industry, and are ready in every legitimate way to encourage business enterprises and they invite capital to consider the nature of the business benefits they feel they are justified in promising.

THE ARAGON MINE.

The Aragon mine is located on N. ½ of N. E. ¼, Sec. 8, leased from estate of H. Seager, S. L. Smith, T. L. Chadbourne and J. A. Hubbell; also on N. ½ of N. W. ¼, Sec. 9, leased from Brier Hill Mining Co. It employs about 264 men. It is equipped with two hoisting shafts, one 6x14 feet with double skip-road and one 7x15 with double cage-road, and a timber shaft 5x10, 340 feet deep. The ore is first mined in rooms across formation, with pillars of ore left standing. Pillars and rooms are about 20 feet wide. All openings are timbered and filled with rock or sand to prevent water from swamp above ore body from breaking into mine. But little ore was found on first and second levels, but the deposit has rapidly increased from third into fifth level. The principal ore body is 300 feet long and up to 150 in width, is filled with two hoisting plants with five and six foot drums, made by Webster, Camp & Lane of Akron, O., and one Rand, and one Norwalk compressor driving 30 No. 3 Rand Drills. A Worthington pump raises 500 gallons of water per minute from (fourth level) 340 feet. For pumping from fifth to fourth a No. 10 Cameron is used.

NELSON STREET—LOOKING SOUTH.

The Aragon is a new producer, but is regarded by experts as a coming wonder. The officers of the company in Milwaukee are Angus Smith, President, Chas. Himrood, Chicago, Vice President, A. W. Wilkins, Secretary, Angus Smith, Treasurer.

THE PENN MINING COMPANY.

The property on which the Penn Co.'s mines are situated is leased from the Lake Superior Ship Canal Co., to whom a fixed royalty per gross tons is paid. The Penn Co. employs about 750 men. On the Brier Hill property, abandoned in 1883, explorations are now being renewed and together with the celebrated Harrison exploration, promises well. The Penn Co. controls a magnificent property and is one of the leading ore producing corporations on the range. President, P. Stackhouse; Vice President, Jno. Townsend; General Manager, Wm. Kelly, Vulcan; Secretary, Treasurer, Harvey Ellis. Head offices, Philadelphia.

LIST OF MINES IN THE NORWAY DISTRICT.

NAME.	OWNERS.	SUPERINTENDENT.	FIRST SHIPMENTS.	CLASS OF ORE.	IRON. %	PHOS.	PRODUCT 1890.	TOTAL OUTPUT.
Aragon.....	Angus Smith et al	Per Larsson...	1889	Castile.....	66	.015	.....	.....
.....	.....	.....	.....	Aragon.....	65	.45	.....	.....
.....	.....	.....	.....	Ingalls.....	64	.60	.....	.....
.....	.....	.....	.....	Granada....	64	.65 to .80	46,609	48,356
Breen Mine...	S. P. Saxton....	.....	.....	.....	.....	.....	.....	.....
.....	Breen Bros.....	.....	.....	Blue	.....	.....	(1891)	.....
.....	Ingalls Estate...	.....	1877	Bessemer..	.....	.....	2,000	See Vulcan.
Brier Hill.....	Penn Mining Co.	Wm. Kelly....	1882	Bessemer....	.....	.....	.....	14,981
Curry	Penn Mining Co.	Wm. Kelly....	1879	Bessemer....	.....	.....	72,162	190,474
Cyclops.....	Penn Mining Co.	Wm. Kelly ..	1877	Bessemer....	.....	.....	7,361	273,797
Norway.....	Penn Mining Co.	Wm. Kelly....	1877	Bessemer....	.....	.....	7,276	1,242,496
Perkins.....	Penn Mining Co.	Wm. Kelly....	1879	Bessemer....	.....	.....	11,971	400,067
Stephenson....	Not operating...	.....	1879	.....	.....	.....	.....	39,350
Sturgeon River	Not operating...	....	1887	.....	.....	.....	.....	19,404
Vulcan.....	Penn Mining Co.	Wm. Kelly....	1877	Bessemer....	.....	.....	104,996	1,409,784

Four miles west of Norway, at an elevation of 458 feet above Lake Michigan or seventy-nine feet nearer heaven lies picturesque Quinnesec, verdant and pastoral and printed in letters of grass which to-day unworn by trafic over-runs its sidewalks. The story of its early creation under Mr. Buell has been written. It was platted in 1875 and the Whitbeck addition pinned on in 1877-8; a hotel and school house was built the same year by Mr. Buell, who practically, though young in years, is the patriarch of the village. In the spring of 1877 the railway reached its limits, and the first paper, the *Quinnesec Reporter*, under Mr. Penberthy's editorship was founded. Quinnesec fairly hummed with industry for a while, and is historically remarkable as being the point at which a large number of the now prominent men of the range first engaged in business, and the point from which, at the time of its apparently final decadence, they fled. The output of its mine gradually diminished, its operators declaring that its ore bed was closing out, whilst per contra their were others who insisted that it was the management who were thus effected. Be this as it may, most of the passengers deserted the sinking ship. After producing 283,323 tons of ore the mine was abandoned. With implicit confidence in the hidden possibilities of the place Mr. Buell, renewed his explorations last November, and with a diamond drill on the west line of the town, on the N. ½, Sec. 3, T. 39, R. 30, within a hop, skip and jump from the school house door, 308 feet below the surface, revealed a fine grained magnetic ore, the first of its kind developed on the range. In conjunction with Dr. Crowell and Mr. J. T. Jones of the Hamilton Ore Co., a two cage working shaft is now being sunk, and from an analysis of the ore the promoters are justly enthusiastic over the discovery. The vein is declared to be seventy feet wide and its product Bessemer. Mr. Buell asserts very positively that the usual method of surface exploration is bound to be disappointing; the true ore bed must be sought in the depths below, and if this system is pursued the whole country from Vulcan to the Menominee river west, which is in no sense explored, should be found to be full of profitable metalliferous deposit.

Before I take you any further west, it is but right that I should introduce you to the railway which has brought you thus far, and of whose extraordinary transportation facilities you have but faint conception. It first reached Quinnesec in 1877 and carried from the range for eastern furnaces 78,028 tons of ore. In 1890 it conveyed to the port of Escanaba, past Waucedah, from Norway and points on the Menominee and other iron ranges west, 3,792,009 tons of ore, besides taking the lion's share of 1,321,544 tons shipped by all rail to Chicago and elsewhere.

That the Chicago and Northwestern moves in a mysterious way and performs wonders is a fact acknowledged by the traveler whose business or pleasure takes him to the solemn woods of Michigan. I have already related the intimate connection which this viaduct—forever sounding with the hum of unceasing travel—bears to the ore development of the Menominee, for it was the vanguard of the army of commercial salvation which invaded the ranges and awakened their slumbering possibilities to a proper sense of trade responsibility.

VULCAN AND CURRY MINES, PENN MINING CO.

The man who originally declared that trade followed the flag, failed to make his excellent axiom wholly complete. The flag, par excellence, which beckons trade, is the inviting ensign which floats from every locomotive that hauls a train over the steel rails of the Chicago and Northwestern railway, and its vast railway system signally demonstrates this. In 1850 trains were first run over the Galena and Chicago Union Railway, consisting of only 42 miles of track. To-day you can travel over its road-bed for 7,000 miles and traverse nine states and territories without exhausting the mileage published in its time cards. Of this total there are 14 miles in N. Dakota, 130 in Wyoming, 382 in Michigan, 820 in Minnesota, 998 in S. Dakota, 1,272 in Nebraska, 1,344 in Iowa, 1,506 in Wisconsin and 594 in Illinois. In a word it gridirons the country of its occupation, and receives a tribute from the varied resources of the latitudes exploited. It

holds as it were in the interests of progress, a trade commission issued by the world of commerce, to develop the discoveries of the mineral explorer, the pine hunter and the husbandman, and connect the centres of trade. It penetrates the ore lands and wakes the echoes of the sombre forests of Michigan; it rouses with its whistle the prairie farmers of Minnesota, whose golden wheat lands bow to its advent; it encourages the corn sheller of Iowa and offers him profitable barter for his yellow grain; it stirs Wisconsin into rivalry with her adjacent states, cementing in friendly competition aggressive "wolverine" and industrious "badger;" it infuses hope and contentment in the minds of the ranchers of Nebraska and Wyoming, and incites the prospectors of the latter territory into renewed effort to "strike" more oil; it affords vigorous Dakota admirable opportunity to discharge the metallic wealth of its famed Black Hills; it measurably assists to develop Colorado's boundless possibilities, and forges the link of direct trade between Portland, on Oregon's Pacific slope, and Chicago, mistress of the greatest saltless seas in christendom. It conveys the merchant pressed for time and hurrying to complete his western engagements, by a transit of wonderful rapidity to the twin giants of St. Paul and Minneapolis; it connects with close alphabetical touch Chicago and Denver, and permits the world's sight-seer to explore at his leisure the famed diorama of the Yellowstone National Park, which eclipses with its vistas the sacred Euphrates.

You can reach San Francisco direct from Chicago without leaving your Pullman, or you can visit Pierre, the capital of South Dakota, by an uninterrupted highway which knocks into smithereens the celebrated "street called straight" in Damascus. Nearly 1,200 locomotives and 38,000 cars are necessary to transport the passengers, mail and freight originating at the 1,300 stations on its line. It requires 1,000 conductors with heroic zeal to guard its trains, 150 of which, with 25,000 passengers daily arrive and depart from the great central passenger station at Chicago. It conveys the products of a country of inexhaustible natural resource, a very empire of staple products, and is awaiting to-day to carry you into the heart of the Menominee to help to develop with your aggressive manhood, your labor and your capital, the richest fields of Bessemer in the universe.

The Chicago and Northwestern is the only road which has direct connection with Norway or its eastern points, and the business man, the tourist or the sportsman may rest complete confidence in the management of its vast system which will land him at the objective point of his desire. Its vestibuled coaches, its dining cars, its smooth road bed and its bridges of steel, guarantee him the greatest luxury of modern travel and a safe and pleasant interruption to his journeyings when he halts to investigate the magnetic influences of wonderful Iron Mountain.

STATEMENT,

Showing Values of REAL ESTATE in the several CITIES of the MENOMINEE IRON RANGE, as compared with various Cities in the

STATEMENT,

Showing Values of REAL ESTATE in the several CITIES of the MENOMINEE IRON RANGE, as compared with various CITIES in the Western portion of the UNITED STATES and CANADA—compiled from reliable sources—whose relative conditions present a fair basis for the instituting of a comparison of Values, and advantages of Investment.

CITY AND STATE.	POPULATION.		WHOLESALE LOTS.		RETAIL LOTS.		ORDINARY BUSINESS LOTS.		RESIDENCE LOTS.		WORKINGMEN'S LOTS.		ADJOINING ACRES.
	1880.	1890.	Depth in Feet.	Price Per Front Foot.	Depth in Feet.	Price Per Front Foot.	Depth in Feet.	Price Per Front Foot.	Depth in Feet.	Price Per Front Foot.	Depth in Feet.	Price Per Front Foot.	Per Acre.
Butte.....Montana	3,363	30,000	100	$500 to 800	100	$300 to 500	100	$150 to 200	100	$ 75 to 100	100	$6.50	$250 to 300
Duluth.....Minnesota	2,645	32,725	120	450	115 to 140	1,200	140	700 to 900	140	125 to 175	120 to 140	15 to 35	1,250 to 2,500
Denver.....Colorado	35,629	106,670	125	1,000	125	2,000	125	900 to 1,000	125	150	125	15	200 to 2,000
Dallas.....Texas	10,358	38,140	200	850	100	1,600	100	100	100	100	100	15	500 to 2,000
Great Falls.....Montana	.....	5,001	150	300	150	300	150	20 to 100	150	46	150	6	100 to 300
Helena.....Montana	3,624	13,834	125	600	115	900	125	150	140	60	125	10	300 to 2,000
Portland.....Oregon	17,577	47,284	100	750	100	1,000	100	350	100	120	100	20	300 to 1,000
Seattle.....Washington	20,550	43,914	120	350 to 500	120	700	120	150 to 500	120	50 to 75	120	5 to 12	200 to 1,000
Spokane Falls...Washington	350	24,626	100 to 142	400 to 500	100 to 142	1,000	100 to 142	500	110 to 150	50 to 75	120	4 to 8	200 to 3,000
Victoria. .British Columbia	5,925	22,000	120	600 to 800	120	900 to 1,000	120	650 to 700	120	75 to 150	120	5 to 7	1,500 to 2,000
West Superior....Wisconsin	655	12,000	140	150	140	400	140	200	140	75	140	15	400 to 2,000
Winnipeg.....Manitoba	7,985	26,000	100	75	120	450	100	200	120	15 to 20	100 to 120	3	30 to 500
Crystal Falls ...Michigan	.....	2,000	140	20 to 30	140	25 to 50	140	20 to 30	140	2.50 to 6.00	140	1 to 4	25 to 100
Florence.....Wisconsin	50	2,000	120	7 to 12	120	10 to 20	120	5 to 8	120	5 to 10	120	2 to 5	80 to 100
Iron Mountain....Michigan	116	9,000	120	40 to 50	120	200 to 250	120	25 to 40	120	10 to 15	120	3 to 5	50 to 150
Norway.....Michigan	*1,800	4,000	120	15 to 25	120	25 to 35	120	10 to 20	120	2 to 7	120	2.00 to 2.50	25 to 50

*Including Township.

THE CITY OF NORWAY.

The ***City of Norway*** is situated in the heart of the Menominee Range, and the first building was erected in 1877. The city which contains about 4,000 inhabitants, is surrounded by ***Iron Mines,*** among which are the Cyclops, Norway, Perkins, Stephenson, Aragon, Harrison, Brier Hill, Curry and Vulcan.

It is situated about two miles from the Menominee river, which divides Michigan from Wisconsin. The Chicago & Northwestern, and the Iron Mountain, Escanaba & Western railways pass through it.

It is surrounded by good ***Farming*** lands, and no one who has undertaken to till the soil, has failed to reap a rich reward.

The lands when taken up, have usually been heavily wooded and have yielded a good profit in ***Cord Wood, Telegraph Poles, Posts, Ties, Hemlock Bark*** and Sawlogs.

A ready Market is found for all these and succeeding crops, and to the seeker after a comfortable home, the locality presents unusual attractions.

The city is the most ***healthy*** on the range, and has many beautiful ***Building sites.*** Some of these situated on the banks of its deep picturesque ***Lakes*** cannot be surpassed.

It has ***five Churches*** of different denominations and four ***School Houses.*** By a recent vote of the people a $19,000 High School building is now being erected.

All the prominent benevolent ***Societies*** are represented, and socially the community is second to none in the state.

While the ***Mining Industry*** will always be the principal one, the opportunities for the establishment of ***Wooden Ware*** factories, ***Sash, Door and Blind*** factories, ***Lime Kilns*** and numerous smaller enterprises, are unlimited.

Norway would be an excellent point for the establishment of a small ***Foundry and Repair Shop,*** as its proximity to the Mines insures a good business. For this purpose a ***suitable site*** would be ***donated.***

CITY OFFICIALS.

Hon. R. C. Flannigan, *Mayor.*

Board of Aldermen :

Capt. Thomas Oliver,
J. B. Knight,
Francis Blackwell,
E. J. Quarnstrom,
Malcolm Anderson,
Dr. C. D'A. Wright,
A. Sparapani,
Frank Sala.

W. M. Ramsdell, *Treasurer.* Charles Swanson, *Clerk.* Donald Cameron, *Attorney.*
John Bunt, *Marshal.* Frank Ahlich, *Chief of Fire Dept.* Dr. O. M. Sattre, *Health Officer*

Justices of Peace

P. Flanagan, Thomas Hay, William Wilcox, Alexis Patenaude,

NORWAY BUSINESS DIRECTORY.

CLASSIFIED LIST OF ADVERTISERS.

Attorneys and Justices—
CAMERON, DON.
PATENAUDE, A.

Druggists—
FINNEGAN, ED.
PATENAUDE, A.

Dry Goods—
GEE, JAS. H.
LUSTFIELD BROS.

Furniture—
SPRINGER, L. F. & CO.

General Merchandise—
BROWING, LINDAHL & CO.
PERKINS, JNO. & SON.

Groceries and Crockery—
ANDERSON, M.

Hardware—
RAMSDELL, WM.

Hotel—
HUSSON, A.

Insurance—
O'CALLAGHAN, T.

Jeweler—
ECKLUND, JNO.

Livery—
KEATING, J. M.

Manufacturers—
O'CALLAGHAN BROS. & CO.

Newspaper—
THE CURRENT

Photographers—
BORDEWICH & ESKILL.

Real Estate—
COLWELL, H. J.
JANSEN, F. A.
O'CALLAGHAN, GEO.

Stationery and Notions—
SAMPSON, R. M.

Tailor—
GARDINER, H. F.

Wines and Liquors—
ODILL, ANTON.
OLIVER, R. C.
ROWE, JOSEPH.

GEORGE O'CALLAGHAN,

——DEALER IN——

LUMBER

STUMPAGE AND WILD LANDS FOR SALE.

REAL ESTATE.

Choice Building Lots for Sale in the City of Norway. O'Callaghan's Addition to Norway and to the Town of Ingallsdorf consisting of Residences and Business Properties.

THE CURRENT

A live weekly newspaper especially devoted to the publication of matters of interest connected with the exploration, development and progress of the Iron Range of the Upper Peninsula, and of the "Menominee Iron Range" in particular.

This paper, besides being an excellent paper as regards local matters, is liberally electic and as such presents the leading current news and opinions on subjects of special interest to its large list of subscribers.

As a recognized authority on Mining affairs, and reaching as it does nearly every mining camp on the Upper Peninsula, the CURRENT presents an admirable medium for advertising mining Machinery.

SUBSCRIPTION PRICE $2.00 PER YEAR.
ADVERTISING RATES ON APPLICATION.

J. B. KNIGHT,
Editor and Prop'r.

J. H. MACNAUGHTON,
Ass't Editor.

O'CALLAGHAN BROS. & CO.

MANUFACTURERS OF ALL KINDS OF

Rough and Dressed Lumber

SHINGLES, POSTS, TIES,

LONG JOIST AND BRIDGE TIMBERS,

AND DEALERS IN

SASH, DOORS, BLINDS, MOULDINGS, ETC.

NORWAY, MICH.

W. M. RAMSDELL, Mgr.

DEALER IN

Shelf & Heavy Hardware, Mining & Lumbermen's Supplies

TINWARE, TIN AND IRON ROOFING,

DOORS AND SASH, BRICK AND LIME,

VILAS' PREPARED PAINTS, OILS, ETC.

AGENT FOR DOMESTIC SEWING MACHINES.

JAMES H. GEE,

DEALER IN

Dry · Goods, · Boots, · Shoes, · Groceries

AND

GENERAL MERCHANDISE.

FOREIGN EXCHANGE ON ALL PARTS OF EUROPE. OCEAN TICKETS, ETC.

BIRDS-EYE VIEW OF IRON MOUNTAIN.—LOOKING SOUTH-EAST.

BIRDS-EYE VIEW OF IRON MOUNTAIN.—LOOKING SOUTH-EAST.

CHAPTER V.

(CONTINUED)

THE CITY OF IRON MOUNTAIN.

C. & N. W. DEPOT—IRON MOUNTAIN.

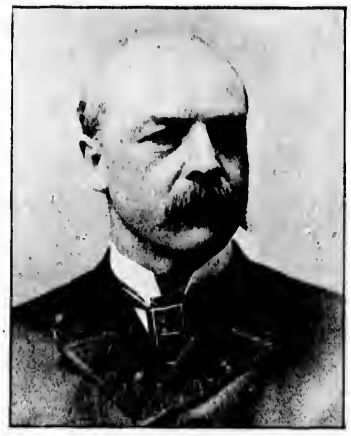
FOUR miles from Quinnesec, but still upwards, having gained 23 feet of altitude in every mile of travel, and we reach the capital of Dickenson County, which rests its acres of undulating pleasantness 550 feet above the waters of Michigan. We are still at about the same relative distance from the river, but have reached the terminus of the abrupt spur of hills which determine the boundaries of the local Iron Mountain, and which—in the case of the pine clad cape, Green Mountain, which stands at gaze over the valley of the Menominee, some 250 feet above the surrounding territory on the west, and "Hughitts" which rises to about the same elevation on the east side of the town—lends an air of physical individuality to these mysterious vistas of country, the development of whose resources you are commencing to realize, are all in their callow infancy.

The population of Iron Mountain in 1880 was less than 150; to-day it is over 9,000, and is one of the few towns of the peninsula which has increased its population by nearly 1,000 souls every year since the first day of its existence. Originally and for many years, part and parcel of, and within the boundaries of Menominee county, its singular qualifications which it shared in common with Norway were largely lost sight of, in its geographical relation to the county town, 70 miles to the southward. On the 21st of May, 1891, agitation had its reward, and the promoters of its metropolitan interests had the satisfaction of seeing their efforts crowned with victory by the formation of the new county of Dickenson—carved out of the area of unwieldy existing ones—with its courts of justice, and its public institutions removed to the new centre of administration, Iron Mountain. Tho' this result had not been accomplished without political tergiversation—a great temporary source of editorial material for range journals—its accomplishment was accepted as the only legitimate solution of the condition of affairs, which necessitated on the part of the client, the law-giver, or the prospector needing adjudication of his claims, a Sabbath day's journey to remote Menominee town.

Now as in this chapter descriptive of Iron Mountain, I intend to elaborate upon the industrial opportunities, which are applicable in a greater or less degree to *every town* referred to and which form the *key* to the *utilizable resources of the whole range*, I propose to submit the veriest outline sketch of its history and its people, giving the greater

amount of attention to the trade possibilities which it to-day presents to the man in search of profitable investments.

In 1879 the first locomotive steamed its way round the curve and halted where the depot, in charge of Mr. Stiles, now stands in the centre of the town. Previous to this, the city was in the wilderness. It was known as "Section 30" in the early days, and at the time of Quinnesec's decease became the asylum for its most prominent men of business, Messrs. A. F. Wright and Hugh McLaughlin moving in at that time. In 1878 there were but four places occupied for the purposes of trade, one a general store run by Mr. C. E. Parent, Andy Boyington's hotel, where Hocking's saloon now stands, R. O. Philbrook's store and postoffice, Louis Dittmeyer's shoe making emporium and Frank Ayer's "temptation shop." This was in the good old days when the trading shacks were so diminutive that the burly miner, when indulging in the luxury of a clean "out-fit" had to move out on to the highway in order to try on his "pants."



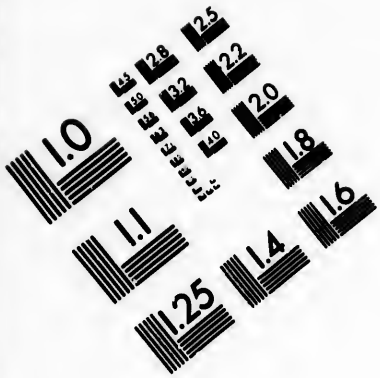
MR. JOHN R. WOOD.

The town at this time could have been bought for a song. Tradition says that Joe. Flesheim who had the place platted, offered it to Van Cleve, the surveyor, for "nothing." However it was a repetition of the old story, there was so much territory and few were to be found with faith enough in it to have "any use for it." In these days, according to Mr. Felch, a man could go out "gunning" and shoot a deer within rifle shot of the present "Felch Hotel," whilst the grey ducks disputed the right of way on Stephenson avenue. With the development of the wonderful Chapin and Lumbermen's mines, men poured in, the camp of fifty souls soon swelled its multitudes, the story of its treasures were circulated and fresh additions were tacked on to the village. The first of these were the Stephenson and Flesheim, then the Jenkins and Spies, then the St. Clair, the Hamilton, Merryman, and the Rosenheim, until the town like "Topsy," "growed and growed," and verified Mr. De Veres prophecy and became the little giant of the Menominee. Joseph Hambly kept the first boarding house in 1878, co-temporary with the sinking of the first Chapin shaft, an excellent view of which I have given elsewhere. Amongst the citizens identified with the early history of the town, were A. F. Wright, H. McLaughlin, W. W. Felch, Jno. Friedrichs, Dr. Cameron, Geo. F. Seibert, Ed. J. Ingram, Sol. Noble, R. L. Hammond, H. De Vere, Vivian Chellew, W. Hocking, Oliver Evans, Mayor Trudell, K. S. Buck, S. Mortensen, Arthur Flatt, J. E. Robbins, E. Croll, M. Gleason, Aldermen Hancock, Dr. Crowell, Carl Schuldes, City Clerk Saving, J. D. Cudlip, A. J. Leveque, B. H. Scott, J. B. Weimer, Geo. Alexander, John Rule, Jos. Lemieux, the Merritt Bros.—all enterprising citizens, and F. W. McKinney, who was active in his efforts to advertise the advantages of the place—besides many others whose indifference however, to written requests for information must rest the reason for omission of reference in these pages. Mr. John R. Wood of the First National Bank, who prospected for mineral as early as March, 1879, and became manager

of the Cornell mine, and was later identified with the Felch Mountain and Vulcan industries and passed two years in the Gogebic Range, and subsequently in Ishpeming, did not make Iron Mountain his permanent home until 1887. To-day Mr. Wood occupies one of the most enviable positions in the city, he is president of the only banking house in Iron Mountain and together with Messrs. Sterling and Silverwood conducts one of the largest real estate and insurance agencies in the Upper Peninsula, and he is further justly regarded as one of the most enterprising men of the range, as a scrutiny of the engravings of the costly brick and stone blocks recently erected by him, bear living witness. Mr. Wood's prosperity and the advancement of Iron Mountain, are synonymous phrases. And the complete realization of both is inevitable.

In these early days most of the trading was done at Quinnesec. In 1880 the Chapin shipped 34,556 and the Lumberman's, or Ludington, 8,816 tons of ore, and the future of Iron Mountain was regarded as a sure thing. The mines at this time being generally known by numbers. The Millie, or old Hewitt mine, made its first shipment of 4,352 tons in 1881. Tens of miners were then only employed, where now are required hundreds. Few real estate transactions are recorded of those days. Lots on Flesheim street 60x126, now worth 1,500, hunted for purchasers at $75. Property purchased on Stephenson avenue for $500 in 1881, to-day cannot be bought for $6,000, and these values are based on rentals. Lots further south on same street, then worth $250, are *held*, no matter how tempting the offer, and these values are recognized in the assessments. In 1879 there was a population of about 100 people. The place boomed and with its advances towards puberty the population steadily increased, and when the railway stormed its solitudes its live inhabitants soon totalled 500 souls. The most of these were Americans and Cornishmen from the copper country or from the older iron ranges, with a few Italians from across the ocean. Meanwhile the prospectors were hard at work and the Indiana mine in 1882 shipped 4,280 tons, and the Calumet under the superintendency of John R. Wood, 5,847, and in 1886 the Cornell, discovered by the same expert, made its first shipment of 4,566 tons, whilst many other explorations, such as the Garfield, the Hecla and the Hancock held out inducements more or less encouraging. The individual shipments of all these mines are given elsewhere.

For a time the gospel was preached by a Cornish miner, in the dining room of the Chapin boarding house. This volunteer evangelist was shortly afterwards killed. The first fatality in the Chapin. In 1884 the first Episcopal service was held in the Brown street school house, by the Rev. E. J. Eichbaum, missionary from Escanaba. From 1882 to 1884 the Rev. John Brown, pastor of Quinnesec, supplied the spiritual needs of the Catholic population, who was in turn succeeded by Rev. Mr. Fanst, who secured by his exertion the property upon which the church and school house now stand and which former was opened for worship during the year named. "To the labors of Father Faust," writes Pere Bourion, the present energetic pastor, "the catholics of Iron Mountain owe their existence as a congregation." In 1881 the first drug store was opened where John Friederichs brick block now stands with Mr. E. J. Ingram in charge. To give an idea of the rapid development of the resources of the place under the Menominee Co.'s regime, the 300 men who were at first upon the professional list of Drs. Cameron and Crowell, physicians to the Chapin mine in 1881, had in 1890 increased in numbers to 3,400.



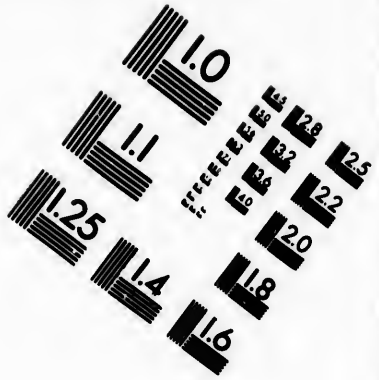
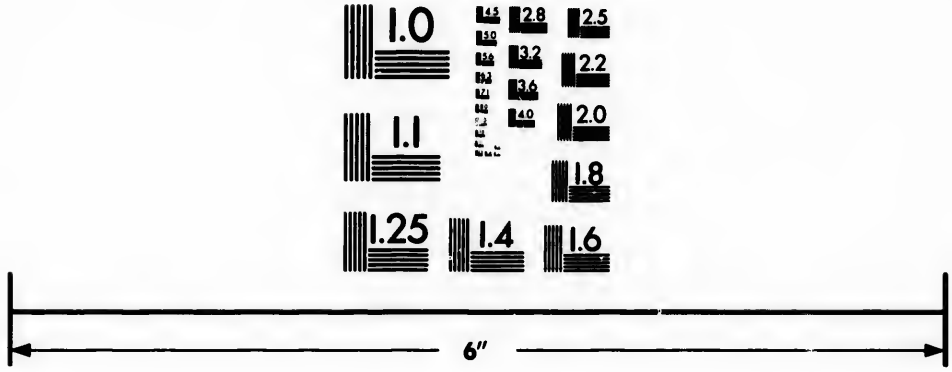
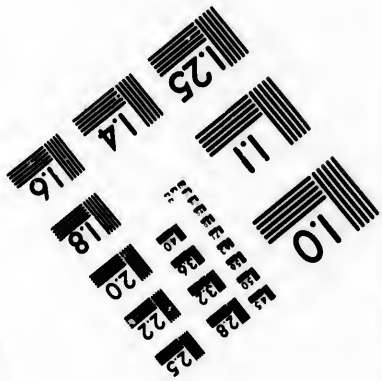


IMAGE EVALUATION
TEST TARGET (MT-3)





Photographic Sciences Corporation

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

It is a remarkable fact and worthy of note in this chronicle, that notwithstanding the men of various nationalities engaged in the mines throughout the range, little—apparent—friction has existed, and greatly to the credit of all concerned, between employers and employed. A strike which at one time threatened serious consequences occurred however once, amongst the Chapin and Ludington men when the miners—there being no Saturday night shift, work being quitted at 6 P. M., and the management wanting work to continue till 11 P. M.—"went out" for five days. One hundred Pinkerton constables and various sheriffs reached the scene, and remained for two weeks, the miners having threatened to stop the pumps, and let the mines fill. Armed with Winchesters, 250 men threatened an attack. The ringleaders were later on arrested and sent to states prison; the miners returned to work; Captain Rundle resigned: Captain Oliver took his place, and the faithful pine trees catching up the remnants and burden of the episode, purged the atmosphere of further industrial tempest.

HYDRAULIC WORKS AND AIR COMPRESSORS—MENOMINEE RIVER.

In the old days what is now Stephenson avenue, was a continuation of the new state road, the trail over which teams hauled and sometimes mired on their way to Crystal Falls by Badwater and Florence. On the west side of the track at the intersection of Flesheim street, only two houses broke the flank of the forest, and from foot to scarp of hill top the dark trunks of the pines formed a black battalion of whispering sentinels. What a change has come over the spirit of the dream. In place of horse and windlass and a few thousand tons of ore a year, with steam and compressed air as much and more has been taken from one mine in a week. Up to 1878, 4,593 tons in all had been mined in the Menominee range. On the 31st of December, 1890, 4,780,775 tons had been produced by the Iron Mountain mines alone! Let us see what manner of a town is this that inherits such latent resource.

Iron Mountain, according to City Engineer Burlingame, covers an area of 2,080

acres. It has 32 miles of streets, capable of being driven over, and four miles of streets graded as level as a ship's deck. The width of these streets varies from 60 to 80 feet. It has 40,000 lineal feet of sidewalks, much of which I may add sadly wants renewing, has four miles of sewer under contract, and about eight miles additional will be laid next year. It has a water-works system valued at $250,000, it has an electric light equipment, a telephone exchange, including connection with Norway, and it has a gas plant in course of construction. Its police force consists of a marshall, T. B. Catlin, and eight men. The fire department consists of a brigade of ten paid firemen, with F. W. Parker as chief. The men have their quarters in the fire halls on Ludington and Second streets, which are connected by electricity with 27 alarm boxes distributed throughout the city, making one of the most perfect systems on the peninsula. Both halls have a Clapp and Jones engine and 3,000 feet of hose. The leading insurance companies in the country carry a heavy aggregate of safe risks in Iron Mountain.

Under the custody of Mr. Geo. F. Seibert, the present postmaster, the yearly business based upon that of one week, shows approximately as follows:—Letters mailed 396,560; received, 341,585. Papers mailed, 31,587; received, 40,470. Money orders issued, 57,920; paid, 34,361. Not a bad showing for 9,000 people, of whom 2,129 are between the ages of five and of twenty. It has two weekly papers, which are sought for by both Republican and Democrat. The one, the *Iron Range*, published and edited by Mr. R. P. Tuten, who has controlled its destinies since January, 1884, and of late with Mr. Smiley's aid, it having been originally established by Mr. Swift in April, 1879; the other, the *Dickinson County Journal*, established by Berry & Larson, 1886, but leased in 1888, and purchased in 1889, by Mr. Herb. Smith, the present publisher and editor, under whose management it now flourishes as a semi-weekly. The Western Union Telegraph Co.'s office, in charge of H. A. Mead, handles some 18,000 messages a year.

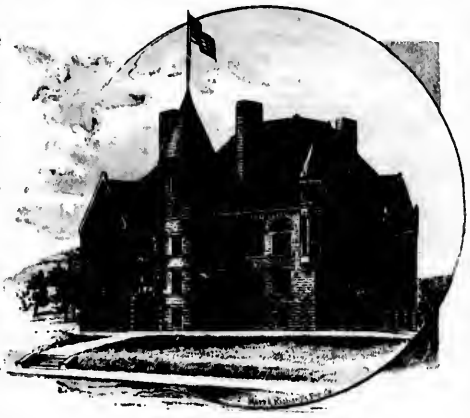
The city is divided into five wards. The following comprise the Board of Aldermen: *Mayor*, F. J. Trudell; First Ward, Oliver Symons, Charles Forrell; Second Ward, H. Shields, W. H. Sweet; Third Ward, D. A. Graham, Wm. Catlin; Fourth Ward, W. H. Hancock, E. F. Brown; Fifth Ward, A. Hunting, L. Tebo; *Treasurer* Oliver Evans; *City Clerk*, John J. Saving; Dr. E. Myers, *Health Officer*. Appended is a statement furnished by the several Supervisors, showing the ward assessments:

		Personal Property.	Real Estate.	Acres.
First Ward,	H. McNaughton, Supervisor.....	$ 7,336	$ 89,906	320
Second "	W. Trestrail "	19,992	1,035,760	480
" "	Lumberman's Mining Co.'s 1st Addition.		16,676	40
" "	Kimberly's 3d Addition		2,624	20
Third "	M. Drapeau, Supervisor.....	8,510	117,350	260
Fourth "	M. Carey, "	75,649	234,854	672
Fifth "	W. Kimberly, "	368	65,338	1,829

Of the Realty in Ward Two, the Chapin Co. is assessed on $800,000, Lumberman's Mining Co. $150,000, and Hamilton Ore Co. $80,000. In Ward Four the Walpole Mining Co. is assessed $800, the Peewabic Mining Co. $32,000, and the Millie Mine $24,000. In 1890 the revenue from all sources amounted to $60,627, exclusive of school tax of $20,000. The expenditures on account of fire protection was $7,000; police, $7,000; water service, $9,000; electric lighting, $4,000. The only debentures issued are on account of street improvements, and amount to but $10,000. Three Justices of the

Peace administer local judgments, the calendar of offences is light, and the crimes of a trivial nature. Fifty per cent. of the cases are tried before Justice Bergeron, Squires Bray and Freidrichs adjudicating upon the rest.

There are three schools presided over by Mr. E. F. Abernethy, Superintendent, whose system and success is of an admittedly superior order. The registers show 722 boys and 657 girls, 1,379 out of a total, but practically impossible number of legally possible attendants, numbering 2,129. Besides the Principal it takes a staff of 25 lady teachers to advance the ideas of young and ambitious Iron Mountaineers. There is a school library of 1,100 volumes. There are three school houses and a new high school now in course of construction, the handsome plans for which were designed by Mr. F. W. Clancy, whose professional reputation is more than local. The etching of it which appears on another page, will explain the fact that it will cost $35,400, and will be, when completed, perhaps the finest north of Milwaukee. It is constructed entirely of blue and red granite from the famous quarries of the Amberg Granite Co., of Amberg, Wisconsin, the same firm being the contractors. It is admitted by recognized authorities, to be as perfect a school house for its size as regards structure, internal design and equipment as any in the entire northwest.



IRON MOUNTAIN HIGH SCHOOL.
BUILT OF AMBERG GRANITE.

The Board of Education at present consists of Messrs. A. F. Wright, President, M. Clifford, Secretary, H. McLaughlin, J. H. McLean, F. E. Woodbury, E. E. Brewster and Mayor Trudell. Another edifice just completed on East Ludington street, is the native red sandstone block of Mr. John R. Wood. It has a frontage (but if you wish to see it to advantage step across the street into the "Bessemer," run by Sol. Noble and view it through the mellow enchantment of a liqueur glass) it has a frontage of 131 feet, and is a monument to the rugged beauty of Iron Mountain rock, the architect's taste, and Mr. Wood's perspicacity. It cost over $20,000. On this same street, only just west of Stephenson avenue, is the new Fisher Block, built by our friend from Florence of that ilk, and Messrs. Oliver Evans and Ed. Ingram. It has a frontage of 60 feet and is constructed of Milwaukee white brick by Contractor Lemieux, from plans furnished by this same Architect Clancy, who is leaving stable legacies of his skill in every town on the range. The Fisher Block cost over $18,000.

There are some fifty merchants engaged in trade of various kinds. Last year the monthly pay-rolls amounted to $200,000. Seventy-five per cent. of this is expended amongst the store keepers. I would here mention that the new county of Dickinson consists of portions of the old counties of Menominee, Iron and Marquette, whose joint valuation, as fixed by the State Board of Equalization amounts to $41,000,000. Benevolent and other societies flourish; there being lodges supported by the Masonic, Knights of Pythias, Odd Fellows and Temperance organizations, besides Italian, French and

English national orders. The Sons of St. George have seventeen lodges in Michigan with a membership of 2,200, the Lord Nelson Lodge of Iron Mountain alone has 262 members, William Pitt of Norway, 263 members, and the Earl of Beaconsfield at Crystal Falls, 314 members. W. Catlin of Iron Mountain is State Grand Secretary. The St. Jean Baptiste and Cristoforo Colombo Societies are also well represented in all the towns of the range. The Protestant Episcopal church dedicated to the Holy Trinity, was built by funds raised through the indefatigable exertions of Mr. John James of James and Croll, late of the Chapin Mining Co., and Mr. C. W. Kennedy late of the Millie Mining Co. It was erected on B. street at a cost—everything included—of $4,800, and was opened Easter Sunday 1890. The Rev. W. Ball Wright, Rector of Menominee, is the visiting missionary in charge, Messrs John James, Dunbar Scott, Lay Readers, Mr. H. De Vere, church warden, and Mr. Geo. Buzzo, organist. The Rev. F. F. Davis D. D., of Detroit, is Bishop of the diocese. There are two Methodist churches. The first in charge of Rev. S. R. Williams, stands at the corner of Fourth and Chapin streets and has an average congregation of 400; the other, the Central M. E. church, Pastor Rev. J. M. Shank, is on B. street. The Presbyterian church organized by the Rev. Melvin Frazer in 1884 with fifteen members, has now over 100 members. There are three Swedish churches, Lutheran, Mission and Methodist, in charge respectively of the Rev.'s W. Petterson, A. Mellander and P. Munson. From this showing it will be seen that the spiritual welfare of the residents of the range towns is well cared for.

Three lines of railway, the Escanaba & Iron Mountain, the Chicago & North-Western, and the Milwaukee & Northern, all have large interests centered in the city. The latter road connects at Champion with the Duluth & South Shore, and the former road connects the other side of Norway with the Sault St. Marie & St. Paul, at Hermansville Junction. On the line of the hustling and popular Chicago & North-Western, twelve hours from Chicago, six passenger trains arrive and depart daily. Independent of the ore trains whose advent and exit, is uninterupted, three "freights" reach the town daily, one from Ft. Howard for Iron Mountain and one for Crystal Falls, and one from Powers for Watersmeet, all returning the same day, and keeping Mr. Stiles the agent, forever on the alert. On the Milwaukee & Northern four passenger trains arrive and depart daily.

The water plant which is operated by an Ypsilanti private company—as an investment—with F. A. Todd President and Ed. A. Ordway resident Superintendent, obtains its supply from beautiful Lake Antoine at the north east end of the city, on Aragon street. It has a pumping capacity of 4,000,000 gallons daily, it has thirteen miles of pipes, and at the furthest hydrant two miles distant has a pressure of ninety pounds to the square inch. The reservoir is a brick tank on Pine Mountain, and which kept filled with 600,000 gallons, will with its own pressure throw ten streams 100 feet high, and last for twelve hours. This Lake Antoine, to which the projected electric street railway will run, is a most enchanting spot, and the summer resort for hundreds of aquatic citizens, seeking boating, bathing or fishing.

Like Norway, Iron Mountain has made provision for its sick. Besides the Hospital at the Chapin mine, Drs. Cameron and Crowell in 1889 established St. George's Hospital—built, equipped and sustained by them. It is provided with fifteen beds,

and accommodation for nurses. It exacts the gratitude of an appreciative public. Relevant to this, I may state that every miner in every mining town pays 40 cents or 50 cents monthly into a mutual benevolent fund, from which he receives in case of accident, $20 a month for a year or less, and a lump sum in case of permanent disability. There is also a life insurance organization in connection with each of the various national societies.

Now I think you know the "Pay Roll" city and its rival sister Norway, as well as I do. They are both equally ambitious, and peopled with the same relative proportion of enterprising and prosperous citizens. They both claim a champion wrestler. Jack King the hero of American heavy-weights, and "Nipper" Wills the light-weight nonpareil. Norway, however, holds the hundred yard medal, George Wright having vanquished Eastern "peds" with established records, within the ten second class. In matters more elevating, those things which tend to exalt the social status and promote the amenities of life, these towns run a neck and neck race anyway at the quarter stretch. Some one other than myself will render verdict at the finish. In the matter of hotels, the Commercial and the Felch, both with excellent accommodations, supply the properly equipped caravansary want of the range sight seer. The points of interest in the city other than those forever offered by the magnetic turmoil of the mines, consist chiefly in the unrivalled picturesqueness of the suburban drives which constitute a paraphrase of all northwestern paradises. The view from the peak of Pine Mountain is distinctly original. Nearly three hundred feet below you a sea of arborescent green rolls its billowy outline and breaks a surf of scattered forest at the base of the mountain. At this season of the year the terraced and rolling bosom of these lowlands —gemmed with steel embossed lakes, terra cotta colored trails, and streams which lace the land with argent braids—eats its way into the heart of startling autumn sunsets, painted by the heavenly Master of all dioramic art.

A study of the table showing comparative prices of Real Estate of range towns, with towns similarly conditioned elsewhere, which appears at the end of the history of Norway, will satisfy the man who purchases Realty as an investment, that the opportunities presented by Iron Mountain in this particular, are exceptionally superior. Outside of available business sites in the mid city—few, if any of which at the present time are upon the market, there are various "additions" which have been tacked onto the original "location," which are rapidly filling up with handsome residences of brick and stone. In evidence of the patent probabilities of its future, Mr. Geilfuss, of the Commercial Bank of Milwaukee—probably remembering that 25 years ago Milwaukee was smaller than Iron Mountain of to-day—recently purchased the whole of the beautiful Lawndale property, lying between the Kimberly and Armstrong additions. Many of the most prominent business men handle real estate, as the Trade Directories which follow the descriptions of each town demonstrate, and reference to whom for reliable information can be made with complete confidence. I might add that the professional and business men whose announcements also appear, are literally and practically the leading representatives of their various callings in their own range town, and to whom correspondence may be addressed with complete assurance of reliable and legitimate co-operation; a perusal of whose advertisements will give the man who may contemplate embarking in business, a correct idea of the branches of trade whose field yet remains unoccupied.

The recently appointed officers for Dickinson County who owe their preferment to Gov. Winan, are as follows: *Sheriff*, Patrick O'Connell. *Register of Deeds*, Hugh McLaughlin; *Clerk*, John Friedrich; *Treasurer*, A. F. Wright; *Prosecuting Attorney*, A. C. Cook; *Commissioner of Schools*, E. L. Parmenter; *Coroner*, David Bergeron, all of Iron Mountain; *Surveyor*, John L. Buell, of Quinnesec; *Judge of Probate*, Patrick Flannigan; *Court Commissioner*, Don Cameron, and *Coroner*, Alex. Patenaude of Norway. Hence, even in the appointment of their county administration, they strive to preserve a comparative equality. Few of the residents now prominent in professions or in business in any of the range towns, but are past masters in the art of exploring, or practical mining. These lovely stock piles of wealth producing hematite, blue as a bunch of Concord grapes, recognize in almost every citizen as he passes an analyser of their marketable worth, and are ever on the alert to listen to the stock phrase of the

mettaliferous enthusiast, when his—"Yes, Sir! mark my words, it will not be many years before you will be able to drive to Norway underground," reaches them from the sidewalk; and the prophecy is a most reasonable one.

At present the industrial development of the towns of the range are in their infancy. I have recited those of Norway, let me schedule those of Iron Mountain.

Mr. Parmenter, of the firm of Ira Carley & Co., who have their saw mills at Ingalls on the C. & N. W. Ry., owns the City Lumber Yard, and handles a large proportion of the cut for the local trade. The mills on the Little Cedar river have a yearly output of 8,000,000 feet of lumber and 20,000,000 shingles, and employ 75 hands. The business of the firm is so increasing as to necessitate the erection of another mill at the crossing of the Sturgeon by the Chicago & N. W. Ry, east of Vulcan, where the water-power having been secured, a dam has been constructed. Two other lumber yards are located in the town, that of the Sagola Co., and of the Iron Mountain Co. The Peninsula Powder Co. have a factory, three and one-half miles from the city, in the township of Breitung,

and employ a dozen or more men. The Wright Bros., who have branch establishments at Marinette and Amberg, Wis, and at Quinnesec, besides their general store business, produced last year 500,000 railroad ties and 1,000,000 fence posts. The Upper Michigan Brewing Co., of which Lee Fordyce is resident manager, whose completely equipped establishment with a capacity of 350 barrels weekly, was opened this summer, supply their quota of the 400 barrels of the estimated daily consumption of the range, and with their spring water product, are fast driving out Milwaukee competition; but these few instances exhaust the industrial calendar. At the Twin Falls an Electric Power Plant is in contemplation, which could of course be utilized in every conceivable class of industry, and supply the motor for the Electric Street Railway which will shortly run between Crystal Lake and Lake Antoine. Every range town is singularly fitted by natural resource for the establishment of factories of every kind, but strange to say, capital has been slow to embrace the opportunities. On one ground alone can this be accounted for, viz: by complete ignorance of the advantages presented. I have written at length on the actual and tangible sources of wealth with which it has been lavishly endowed, let me now endeavor to make plain how these native staples can be converted by industrial interference — at the very fountain head, the base of raw supply—into the perfected article of commerce.

THE FISHER BLOCK.

I find on searching the report of the American Iron and Steel Association for 1890, prepared by Mr. J. M. Swank, that the production of Bessemer steel rails for 1890 was 2,091,978 net tons as against 1,691,264 tons in 1889, or an increase of 23 per cent., and from another source I find that the increase over the production of 1880, which was some 700,000 tons was 290 per cent. I also find upon reference to Poors' Railway *Manual* that 5,756 miles of railway were built in 1889, and 6,344 in 1890. I also find elsewhere that in 1890 4,131,535 tons of Bessemer steel ingots, 3,834,816 tons of cut steel nails, and 3,135,911 tons of wire nails, besides hundreds of thousands of tons of other manufactured iron which helped to account for the 10,000,000 tons of pig, was all produced during the last calendar year in the United States. I also find, however, upon reference to other trade returns, that not one solitary pound of this metal was manufactured on the Menominee Iron Range, though she contributed about one-eighth of the entire raw supply! This fact seems incomprehensible. The trade question of the cost of the *assembling of material* is directly effected by this extraordinary state of things. Bear with me whilst I attempt to sift these materials and endeavor to assemble the true trade facts.

The prime factor which tends to concentrate commerce and develop industries is cheap transportation. Economy in freights all other conditions being half equal, absolutely controls trade. Freight the world over, averages about $40 for every $500 worth of merchandise carried. The imports of all nations during 20 years previous to

the world's census of 1880, amounted to 12 per cent. more than the exports; which proves the statement. The cost, however, of freight on ore from point of production in the Menominee to eastern furnaces, is from two-fifths to three-quarters of its value at the mine's mouth. There are no discriminating freight rates, hence the transportation cost of lower grade ores would reach in some cases the total of their value at the pit, which of course under present conditions, bars them from a market. The richest ore carries with it at least 30 per cent. of waste; the poorest at most 55 per cent. Many of the soft ores also carry about 12 per cent. of water. This ore converted into rails and other perfected articles of trade, returns to the producers section of territory in the Northwest, after bearing two freights, one-third at least of which is upon unprofitable material. Surely the manufacturers have been dreaming. However, it is not yet too late to assemble a portion of all these raw materials in the valley of the Menominee. The whole question resolves itself into one of cost of transportation, let us then analyze this subject of freights.

In order to demonstrate the feasibility and the profit that should accrue from the manufacture of Bessemer steel in the Menominee, I will proceed, with your permission, to at once locate, on paper, these projected works. Any point on the range will answer; but as I cannot undertake to tabulate a statement of the slightly varying freight rates from each locality, I will accept Iron Mountain as an example, and in submitting the appended statement of cost of freight, would merely add that the additional local rate from any point in the district has merely to be added to or—in the case of Norway—deducted from the amounts as charged against Iron Mountain, to make the statement applicable to every town on the range. In order to carry out the scheme as projected in its entirety, I would premise that steel works would also have to be established at Connellsville, Pa., the hub of coke-dom, in order that a profitable equalization of freights to and from the coke and ore fields, might be maintained. The steel works with a capacity of 1,000 tons a day, which would be erected at Iron Mountain, would require, say 1,000 tons of coke per day, and 500 tons of coal for soaking pits. At the eastern end of this industrial larriat, at Connellsville, Pa., steel works should also be erected with a capacity of say 750 tons, requiring 1,500 tons of ore to balance freight—that is, to equalize the 1,500 joint tons of coke and coal daily required at Iron Mountain and shipped from the East.—This is interesting and I want you to follow me.—To convey these freights so largely differing in bulk, suitable cars would have to be constructed to carry the ore one way and the coke the other. The tram cars from the mine would dump into the empty coke cars, and the coke ovens would unload into the empty ore cars at Connellsville. Hence there would be no empty cars to haul either way as at present. Of the 5,000 odd ore cars last year in use by the Chicago & Northwestern Railway, and which loaded once only would carry over 70,000 tons of ore—Michigan ores approximate about 14 cubic feet per ton—and which to the lake port of Escanaba alone conveyed 3,756,000 tons of ore, *returned to the mines empty*, save for the relatively paltry 150,000 tons of coal brought rangewards. At present the ore cars run empty from Pittsburgh to Cleveland; the vessels run empty from Cleveland to Escanaba, and empty cars are again in order between Escanaba and Iron Mountain. Under existing circumstances a ton of rails in the Menominee bears *three* freights, viz., two tons of ore to Pittsburgh, and one ton of rails back to the Northwest. With steel works at Iron

Mountain an additional yearly return freight would be established of close on 500,000 tons.

With the easily smelted ores of the Menominee, there is no question—as I am informed by resident experts—but that *one ton* of coke—2,240 lbs.—will make *one ton* of *steel* rails, using the direct process from furnace, with soaking pits. By the crude processes formerly in vogue, it took *five* tons of fuel to make *one ton* of *iron* rails. Half a ton of coal is allotted, as shown in table of freights. In the consideration of this scheme, one salient fact must be borne in mind, viz.: that the first cost of material is the *same* whether used in Iron Mountain, Chicago or Pittsburgh. The expense of making rails depends upon the *cost of freight* entirely. To carry out the idea completely all kinds of finished steel, nails, etc., would have to be manufactured.

The next consideration is the market for the product. I have already shown that there is a population of eight or ten millions of people to the north and west of us, consuming to-day over 300 pounds of iron per caput annually. And the true centre of population is gradually creeping northwestward, as the census proves. Locally we have three railroads, themselves penetrating the northwest, and connecting with others which are pushing their industrial tentacles into remote regions awaiting more complete colonization. Up to the 1st of October this year 2,829 miles of additional railway track had been added to the mileage of the country since January. With these competing and consequently lower freight charges, a market for all the product of Iron Mountain steel works would obviously open up and for every ton so shipped it would have a freight advantage over Chicago, whilst Connellsville would be on even terms with Pittsburgh as regards the sale of its product.

PUMPS, THIRTEENTH LEVEL—HAMILTON MINE.

As regards the supply of flux, the hanging walls of the mines here are of magnesium limestone, equal to that used in Chicago. The out-crop is large and could be readily trammed into the furnace. Of this limestone I append an analysis: Carbonate of Magnesia 30 per cent., Silica 3 per cent., Iron and Alumina 2.50 per cent., Carbonate of Lime 641.50 per cent.

As regards the supply of iron ore, if not already satisfied on this point, let me clinch previous assertions. The great Chapin vein, of which the Hamilton and Ludington are a part, will not be mined out this generation. There is now proven up over 30,000,000 tons of ore with no sign of abating either in quality or quantity, at the depth of 1,300 feet, as demonstrated by the vein in the bottom of the Hamilton mine. Twelve months since the Ludington had 50,000 tons in sight, to-day, according to Superintendent Banks, they have 650,000 tons visible and awaiting the rock drill and the explosive. And here let me remind, or inform the economist, that a marvellous co-adjutor, equal to either dynamite or Rand drill, stands at the elbow of the Menominee manufacturer forever offering its eternal co-operation. The water powers that surround these huge

mineral deposits seem to have been especially located by the Great Master of all to assist man in his local efforts to perfect the finished article from the crude iron stone. Within a radius of three and one-quarter miles are four cataracts whose joint power exceeds that of 7,500 horses, viz: The Upper Twin Falls 600, the Lower Twin Falls 900, the Horse Race 1,200, the Upper Quinnesec 4,800; whilst within five and a quarter miles are the Lower Quinnesec, of 7,200 horse power. The steel works whose plan of operation I have sketched, would thus have the advantage of obtaining the air direct from the convertors without the heavy compressor usually driven by steam, and the hydraulic crane could be worked without steam, as could the blowers for the furnaces, engines for rolls, and indeed all the motive power, leaving the gases generally used for generating the steam to be applied for hot blasts, heating blowers and soaking pits.

Other advantages are manifest, there would be no stocking of the ore used, during winter months, and hence no cost of removal during the summer, and the interest on the stock of ore now carried to Cleveland, during the last days of navigation—indirectly paid by the steel-works—would be saved. The freight rates as given in the accompanying table are of course but approximate, but comparison with rising or falling rates will show the same relative percentage of difference.

Accepting these figures then as a proper base upon which to pursue the calculation to its legitimate conclusion, I find that when eastern furnaces and steel-works would be just about holding their own, works at Iron Mountain would be making $2.74 per ton, and that when Chicago manufacturers would be merely paying their way, the Iron Mountain steel-works should be clearing $2.27 per ton, representing a snug and very material sum of industrial profit per diem.

Who will come, and by practically experimenting in the direction as outlined, prove the *bona fides* of my contention, and in the establishment of such an industry, lay the foundation of a business, which inevitably would develop, at no distant date, into the hardly less huge proportions now strictly limited to the Illinois Steel Co., the Carnegies, the Cambria, and a few other equally gigantic and profitable monopolies.

THE CHAPIN MINE.

This mine, the fee of which is owned by Mr. H. A. Chapin, of Niles, Mich., consists of the S. ½ of S. W. ¼, and S. W. ¼ of S. E. ¼, of Sec. 30, T. 40, R. 30. The proprietary interest originally held by the Menominee Mining Co., passed into the hands of the now styled Chapin Mining Co., better known as the "Schlesinger Syndicate." It was discovered by Dr. N. P. Hulst in 1879. The ore is a soft hematite. During the year 1890, it employed an average of 1,800 men. It is remarkable through reason of its rapid development, it being the greatest mine, with one exception, in the Lake Superior region. Its total output up to the close of 1890 being 3,218,543 tons, it having produced 742,843 tons during last year. The machinery and equipment is probably on a more extensive scale than that of any iron mine on the continent. A special request for particulars concerning its plant and working history, which would have been of more than mere local interest, was not acceded to by its management. At the time of writing, the position of superintendent, owing to a re-organization, has not been filled.

The names of officers as supplied to me by the Vice President are:

M. A. Hanna, *President;* George H. Kent, *Vice President;* Head Offices, Cleveland and Milwaukee.

TABLE

Giving Comparative Cost of Freight on material necessary for the Manufacture of ONE TON OF BESSEMER STEEL RAILS, at the undermentioned places, *via* Lake and Rail and *via* all Rail, separately. Showing the advantages which IRON MOUNTAIN, operating with CONNELLSVILLE, PA., possesses over CHICAGO or PITTSBURGH:

NOTE:—The following calculation is based on the assumption that the undermentioned quantities of material are required to make One Ton of Steel Rails, viz.: 2 Tons of Ore, 1 Ton of Coke, ½ Ton of Coal, ½ Ton of Lime.

Locality of Works.	2 Tons of Ore to Escanaba.	2 Tons of Ore to Cleveland.	2 Tons of Ore to Chicago.	2 Tons of Ore to Joliet.	2 Tons of Ore to Pittsburgh.	2 Tons of Ore to Connelsville.	1 Ton of Coke to Cleveland.	1 Ton of Coke to Chicago	1 Ton of Coke to Joliet.	1 Ton of Coke to Pittsburgh.	1 Ton of Coke to Escanaba.	1 Ton of Coke to Iron Mountain.	½ Ton of Lime to Chicago.	½ Ton of Lime to Joliet.	½ Ton of Lime to Pittsburgh.	½ Ton of Lime to Connelsville.	½ Ton of Coal to Cleveland.	½ Ton of Coal to Escanaba.	½ Ton of Coal to Iron Mountain.	½ Ton of Coal to Pittsburgh.	½ Ton of Coal to Chicago.	½ Ton of Coal to Joliet.	Total via Lake and Rail.	2 Tons of Ore to Chicago.	2 Tons of Ore to Joliet.	2 Tons of Ore to Pittsburgh.	2 Tons of Ore to Connelsville.	1 Ton of Coke to Pittsburgh.	1 Ton of Coke to Chicago.	1 Ton of Coke to Joliet.	1 Ton of Coke to Iron Mountain.	½ Ton of Coal to Pittsburgh.	½ Ton of Coal to Chicago.	½ Ton of Coal to Joliet.	½ Ton of Coal to Iron Mountain.	½ Ton of Lime to Pittsburgh.	½ Ton of Lime to Connelsville.	½ Ton of Lime to Chicago.	½ Ton of Lime to Joliet.	Total via All Rail.
Pittsburgh Steel Works	$1.80	2.00	.....	.....	2.50	.....	.....	.....	.....	.75	.....	.....	.....	.....	.57	.....	.....	.....	.....	.....	.25	.....	.....	$7.37	3.50	.....	5.00	.....	.75	.....	.....	.....	.25	.....	.....	.....	.57	.....	.....	.....	$10.07
Chicago Steel Works.	1.30	.....	1.60	.80	.....	.....	.....	2.75	.....	.....	.....	.....	.20	.20	.....	.....	.....	.....	.....	.....	.87	.20	.....	7.92	3.50	.80	.....	.....	2.75	.....	.....	1.00	.....	.....	.....	.....	.20	.30	8.45
Iron Mountain.	.....	.....	.....	.....	.....	.....	1.75	.....	.....	.75	.50	.....	.....	.....	.....	.....	.62	.40	.25	.....	.....	.....	.....	4.27	.....	.....	.....	.....	2.75	.....	1.50	.....	.87	.....	.75	.....	.....	.....	.....	5.87
Connellsville Pa.	1.80	2.00	.....	.....	2.50	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.30	3.50	.....	5.00	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.00

SUMMARY.

	VIA LAKE.	VIA RAIL.
Pittsburgh Steel Works	$7.37	$10.07
Chicago Steel Works	7.92	8.45
Iron Mountain Steel Works	4.27	5.87
Connellsville	7.30	10.00

	VIA LAKE.	VIA RAIL.
Difference in favor of Iron Mountain over Pittsburgh	$3.03	$4.13
Difference in favor of Iron Mountain over Chicago	3.58	2.51

In the study of this table it must be borne in mind that Iron Mountain is of course not chargeable with freight on either ore or limestone; neither is Connellsville chargeable with either limestone, coal or coke, these respective materials in both instances, being produced at the places named, and forming the "balance of freights."

	VIA LAKE.	VIA RAIL.
Average Iron Mountain and Connelsville	$5.78	$7.93
*Less 25 per cent. advantage in the haul both ways	4.34	5.94

*Being a legitimate reduction allowed by transporting companies, owing to the handling of return freights.

From Mr. A. P. Swineford's *Annual Review*, 1883—the first, I regret to say, of that well known writer's publications which has come under my notice, and it, whilst these pages were actually in the hands of the printer—I find the following interesting reference to Mr. Chapin's connection with this wonderful property, and "illustrative of the mutations of individual fortunes:"

The fee for the property was entered by his son-in-law many years ago, then editor of the Marquette *Mining Journal*, who "knowing that the old gentleman was the owner of a bounty land warrant and some agricultural or other land scrip, wrote to him saying that if he would send the warrant and scrip to him (the son-in-law) he thought he could place them where they would do him the most good in later years. The old gentleman sent the warrant, which called for 120 acres, and the scrip, both of which were applied in the location of lands on what is now known as the Menominee Range, then an unbroken wilderness. It afterwards transpired that the state had received and used more of this certain kind of scrip than the amount to which it was entitled, and the entries made with that sent up by Mr. Chapin were cancelled. The warrant covered the 120 acres on which the Chapin mine is located and for which a warrant was duly issued to Mr. Chapin. In the course of time, Mr. Chapin failed and turned over to his creditors all of his property, including the land in question, reserving only that which was exempt by law from execution. The creditors, being anxious to realize as much cash as possible, and deeming the land worthless, or at least unavailable, proposed to Chapin that if he would turn out $250 worth of exempt property he might keep the land, which proposition he accepted. What he gained by the transaction, and what the creditors, or whoever might have purchased the land had it been sold on execution, lost, may be partially estimated from the fact that he has already received over $200,000 in royalty, paid him by the lessee, while he or his heirs can confidently anticipate an annual income of from $50,000 to $150,000 from the same property for years to come. From penury it has not only raised him to affluence, but made him, prospectively, one of the richest men in the state of Michigan."

Mr. Swineford's forecast was within the limit. I am informed that last year Mr. Chapin received about $300,000, net income, as his royalty tax on the output. Whilst no one I apprehend grudges Mr. Chapin his excellent fortune, it is in quite good order to question the soundness of the applied system of political economy, which permits any one to reap such a royal benefit from any local industry, without exacting a toll for local public purposes. Fee owners pay no taxes. Of Mr. Chapin's princely income not one cent is retained by authority to assist in defraying the civic expenses of Iron Mountain. Where are the single tax agitators? My remarks are offered with no personal reference to Mr. Chapin—Iron Mountain will doubtless be tangibly apprised of his munificence one of these days—they are directed against the principle, which not alone is an injustice to the localities drained of their life blood with no *quid pro quo*, but also against the overdone system pursued by many Shylock fee owners, who levy such an imposition in the shape of royalties, that men financially ready to develop properties, are unwilling to outlay in the face of such a usurious tithe. If the owners of these lands were compelled to place a *selling* value on their property, at which valuation they would be assessed, subject to annual revision, these vexed questions would soon right themselves.

	VIA LAKE.	VIA RAIL.
Average Iron Mountain and Connelsville.....	$5.78	$7.93
*Less 25 per cent advantage in the haul both ways.....	4.34	5.94

*Being a legitimate reduction allowed by transporting companies, owing to the handling of return freights.

In the study of this table it must be borne in mind that Iron Mountain is of course not chargeable with freight on either limestone; neither is Connellsville chargeable with either limestone, coal or coke, these respective materials in both instances, being produced at the places named, and forming the "balance of freights."

THE HAMILTON MINE

Is owned by the Hamilton Ore Co., miners of Menominee Range ore, of Sharon, Pa., and is located on the N. ½, S. W. ¼, Sec. 30, T. 40, R. 30, which 80 acres is leased from the Hamilton, Merryman Co. It was prospected for in 1883 by Mr. John T. Jones, the present Superintendent, who discovered with a diamond drill in that year, the ore body which from present indications, will shortly rival with its output the

famous Chapin. The first shipment of ore was made to Sharon May 25th, 1888. The ore is a soft blue hematite and of the same quality as that of the Chapin or Ludington. The Hamilton is as yet an infant, giving little thought to producing, but simply developing, but towards the entering of the lists as a competing shipper, all the indomitable energies of the superintendent are now being directed. That the expectations of its owners will be more than realized is already accepted as an accomplished conclusion. Mr. Jones' forecast of the probabilities have been more than verified, and the successfully bold expenditure of hundreds of thousands of dollars upon his ultimatum that the ore was there if the company cared to incur the cost of reaching it, whilst characteristic of the nerve of the promoters, and the confidence placed in Mr. Jones' astuteness, has emphasized in an extraordinary manner that gentleman's mining acumen. Mr. Jones is the oldest, not in actual years, but as regards length of service of any superintendent on the range. As a representative mining man, and as one of the most enterprising business men of the Menominee, his portrait finds a place in these pages. Without it, the work would be incomplete.

MR. JOHN T. JONES.

At first only 30 men were employed at the Hamilton. now the force numbers 300. So far all the ore produced has been sent to the company's works at Sharon, Newcastle and Greenville, where sheet iron, bar, pig and nails are manufactured. No ore has as yet been placed on the market. Of the two shafts, No. 1 is 1,460 feet vertical depth, and is 843 feet to the first level. No. 2 is 1,435 feet down and it is estimated may have to penetrate 2,000 feet before the ore is reached. Ore was reached in No. 1 shaft at 700 feet and continued for 500 feet, with a width of 140 feet. It is estimated that 2,000,000 tons of ore are in sight. Last year 17,092 tons were produced. This year 70,000 tons have so far been shipped. Shaft No. 2 is seven by twenty-four feet inside the timbers. The hoisting plant about to be placed in position by the celebrated Webster, Camp & Lane Machine Co. of Akron, Ohio, will, it is claimed, be the largest one shaft equipment of any in the world. The plant will consist of two direct-acting or first-motion engines and two reels, and will weigh complete 165 tons. The engines, rated at 1,500 horse-power, are of the Corliss type, fitted with the company's improved valve gear and relief mechanism, and the dash pots of these are especially noteworthy for their rapid and silent action. The cylinders are 32 inch bore by 72 inch stroke, with steel piston rods four and three-fourths inches in diameter. The reverse mechanism employed for these hugh engines is, perhaps, the most novel feature of the entire plant. Description sufficiently detailed to do them justice cannot be entered into here, but their construction and action is bound to claim the attention of engineers of the wide world.

The engines are coupled to a crank shaft 17 inches in diameter, supported at the centre by a heavy pillow block. This shaft carries the two reels which have a capacity for 2,500 feet of flat rope seven-eighths of an inch thick by eight inches wide. The reels

are fitted with powerful band friction clutches, and controlled by heavy post brakes of the Western type. The rope is the largest used in this country, and at a depth of 2,500 feet will sustain a load of ten tons of ore, besides the weight of the skip, which is the maximum capacity of the plant. The Hamilton Ore Company were the first to introduce the flat ropes in the Menominee. The advantages of these, over round ropes, for deep workings are many, and their use is apparently coming into general favor. To insure a rapid stopping of the engine, as well as of the reels, brakes are fitted to the engine crank disks. These brakes, as well as the post brakes, clutches, and reverse, are operated by individual steam cylinders which are controlled by levers on the operators platform, so that the entire plant can be worked with complete ease and surety by the engineer in charge. Iron Mountain is one vast machinery hall, all in motion. A visit to witness its wonders will well repay you.

THE PEWABIC MINE,

Another new candidate for first-class honors, is located on the S. W. of N. W. ¼ of Sec. 32, T. 40, R. 30, and was discovered by Dr. Hulst in 1889. The property which consists of the S. ½ of the section was acquired—by the same management as that composing the old Menominee Mining Co.—from Welcome Hyde of Appleton, owner of the pine lands, and member of the original Chapin Co.

The ore produced by the Pewabic is a very high grade Bessemer. It is a soft, blue hematite, low in phosphorous and sulphur, carrying 66 per cent. of metallic iron, and .009 of phosphorous, and is especially adapted for steel and the higher classes of manufacture, and has an average value at mines mouth of $5.00 a ton. It is classified by the State Commissioner of Mineral Statistics as "gilt edge." Notwithstanding the short time that it has been subject to active treatment, under the close and constant supervision of Mr. E. F. Brown, Superintendent—Alderman for Ward No. 4 and Chairman of Finance, City of Iron Mountain—and one of the characteristic "hustlers" of the Menominee, a tremendous amount of work has been accomplished. Already a shaft fourteen feet six inches by five feet six inches has been sunk to a depth of 500 feet. This divided into two compartments for cages, and one for pumps and ladders. The three levels, including drifting and cross-cuts, exceed 4,618 feet. It is furnished with two pumps, which with a maximum lift of 1,000 feet, each can raise 1,200 and 1,000 gallons per minute, respectively. The power is all steam, except for drills and underground hoist, which are driven by compressed air. The six boilers yield 100 horse power each. Fourteen of Rand's wonderful rock drills—indeed, what would the miner do without the saving invention of Rand—are kept busy. Two Corliss hoisting engines with a maximum hoist of 1,500 feet, control the steel cables which raise the cages. The length of underground and surface tramway is 1,345 feet, the double track system being in operation. Thus it will be seen that Mr. Brown's reputation as an untiring worker has not been forfeited. On page 95 I have perpetuated, with Mr. Mortensen's and Messrs. Marr & Richards' joint skill, Mr. Brown's picturesque residence in "half-tone."

In 1890, 26,991 tons of ore were shipped, a spur track from the C. & N. W. Ry. Co. has been built up the valley to connect with the long elevated trestle, which leads from the mine's mouth. The officers of the company are in Milwaukee, and the officers are: G. D. Van Dyke, *President;* J. H. Van Dyke, *Vice President;* W. D. Van Dyke, *Secretary;* Dr. N. P. Hulst, *General Manager;* E. F. Brown, *Resident Superintendent.*

From the Management of the Millie Mine and of the Walpole Mine, no particulars have been submitted.

THE LUDINGTON MINE,

Which abuts the Hamilton, was discovered in 1880 by George E. Stockbridge, and is on the northeast corner of the S. ½ of S. E. ¼ of Sec. 25, T. 40, R. 30, 120 acres. A few years since the property could have been bought for a song, as the ore-bed was supposed to be exhausted. Practical work with the diamond drill developed new and important deposits, and the stock previously unsaleable reached impossible prices. Last year it shipped 97,355 tons of 60 to 68 per cent. of just below Bessemer grade ore. The property is leased from the fee owners, the Lake Superior Ship Canal Co., who exact an average royalty toll of 40 cents a ton. The ore is of fine quality, especially adapted for the "fix" trade, and for utilizing in the finer classes of manufacture.

The mine is being developed with three shafts, the respective depth of which is 1,320, 1,280 and 1,050 feet, and the drifts, etc., on the various levels exceeding 25,000 lineal feet. Under Mr. Bankes' active superintendency, work has been pushed to the extent of the limit, and the grounds unceasingly are a very bee-hive of industry. Last year's operations will demonstrate this. One thousand five hundred and sixty-nine feet of shafting were sunk; 500 feet of shafts re-timbered; 1,000 feet of shaft divided into two compartments, and over 3,530 feet of drifting completed. Twelve months since but 50,000 tons of ore were "in sight." Mr. Bankes now estimates as the result of late development that 650,000 tons are to-day visible. So much for skill and labor. The mining plant is of a most costly description. The E. P. Allis Co. of Milwaukee are engaged at the present time putting in new and powerful machinery. The Webster Camp and Lane friction gears are used. The Ludington Co. have a one-third share in the Hydraulic Co., whose works [illegible] the Menominee river, a beautiful view of which appears on page . These were built at a cost of $400,000, and supply to the extent of their capacity, compressed air, carried a distance of three miles, and which is the chief motive power for the machinery of the mines. The large automatic double deck cages will carry 40 men at a time. The daily output of this mine next year is placed at 1,500 tons.

The officers of this company are, A. A. Carpenter, *President;* S. M. Stephenson, *Vice President;* F. A. Brown, *Secretary* and *Treasurer;* all of the town of Menominee. The head office is at Iron Mountain, with Mr. Robert Bankes, *General Manager*, and Henry Davis, *Captain.*

WOODS' SANDSTONE BLOCK.

THE CITY OF IRON MOUNTAIN, MICH.

This City has a population of about 10,000.

It is the ***County Seat*** of Dickinson County.

It is centrally located in the great ***Iron District*** known as the ***Menominee Range.***

During the year 1890, the Mines within the city limits produced about 1,000,000 tons of ***very high grade*** Iron Ore, giving direct employment to over 3800 men.

This city offers the ***greatest inducement*** to ***Capitalists*** of any in the State of Michigan, having within its limits ***Mountains of Ore,*** that if treated locally would yield ***great profit*** to the manufacturer.

The ***Immense Water Powers,*** within three miles radius of the city, offer power at a minimum of cost.

Railway Facilities:—Chicago & Northwestern; Chicago, Milwaukee & St. Paul; Escanaba, Iron Mountain & Western.

The city is lighted by ***Electricity;*** has a ***Gas Plant*** in course of construction; has a ***Water Works System*** with twelve miles of mains and a pumping capacity of 4,000,000 gallons daily.

A ***System of Sewers*** three miles in length is being constructed, while about eight miles will be laid next year.

On completion of the Sewer, three of the main business streets are to be paved with cedar block.

It has one of the most efficient full paid ***Fire Departments*** in the State of Michigan.

It has ***two Roman Catholic Churches*** (English and Italian); ***three Methodist Churches*** (two English, one Swede); ***one Episcopal; one Presbyterian; two Mission Churches*** and ***one Norwegian Lutheran Church.***

The present ***High School Building*** and ***four Ward Schools*** were erected at a cost of $37,500.

A new ***High School Building*** of ***Granite*** is being erected, the cost of which will be $55,000.

Building Lots cost from $50 to $350 per foot.

Residence Lots cost from $3 to $20 per foot.

It has ***two Newspapers.***

It is provided with ***Hospitals*** for the sick, and the ***Medical Faculty*** are ably represented.

Lake Antoine, a most picturesque sheet of water over two miles square, offers many pleasurable attractions.

Hon. F. J. Trudell, *Mayor.*

BOARD OF ALDERMEN.

Oliver Symons.	Charles Forell.	H. Shields.
W. H. Sweet.	D. A. Graham.	Wm. Catlin.
W. H. Hancock.	E. F. Brown.	A. Hunting.
L. Tebo.		

Oliver Evans, *Treasurer.* John J. Saving, *City Clerk.*

IRON MOUNTAIN BUSINESS DIRECTORY.

CLASSIFIED LIST OF ADVERTISERS.

Architects—

CLANCY, J. E.
LEMIEUX, JOS.

Attorneys and Justices—

COOK & PELHAM.
HAMMOND, R. L.
TRUDELL, F. J.
BERGERON, D.
FREIDRICH, JOHN.

Bankers—

FIRST NATIONAL BANK,
Jno. R. Wood.

Butchers—

HASTINGS & HANCOCK.

Blacksmiths—

NOBLE, SOL.
PAUL, AUG.

Brewers—

UPPER MICHIGAN BREWING CO

Boots and Shoes—

SCOTT, B. H.

Carriage Makers—

NOBLE, SOL.
PAUL, AUG.

Contractors—

ALEXANDER, M. G.
RULE, JOHN.

Druggists—

INGRAM, E. J.
SEIBERT, G. F.

Dentist—

JONES, J. D.

Dry Goods—

SCHULDES, CARL.

Furniture—

ROBBINS, J. E.

General Merchants—

WRIGHT BROS.

Groceries and Provisions—

BALDIERI, JOS.
JAMES & CROLL.

Hotels—

COMMERCIAL HOTEL,
FELCH HOTEL.

Insurance—

MILLER, R. TH.
STERLING & SILVERWOOD.

Jewelry & Musical Instruments

BUCK, K. S.
LEVEQUE, A. J.

Lumber Yard—

PARMENTER, E. L.

Newspaper—

THE IRON RANGE,
R. P. Tuten.

Photographer—

MORTENSEN, S.

Real Estate—

COOK & PELHAM.
FREIDRICH, JNO.
GEILFUSS, A. B.
HOUGHTON MINERAL LAND CO
MILLER, R. TH.
MCLAUGHLIN & DE VERE.
STERLING & SILVERWOOD.
WEIMER, JNO. B.

Stationery and Cigars—

FLATT, ARTHUR.

Tailor, Merchant—

SAVING & CO.

Wine and Liquors—

"THE BESSEMER," Sol Noble
"CHAPIN HOUSE,"
Merritt Bros.
GLEASON, M. C.
HOCKING, WM.

JOHN R. WOOD, President. JOHN PERKINS, Vice President.
OLIVER EVANS, Cashier. R. SILVERWOOD, Ass't Cashier.

DIRECTORS.

J. A. CROWELL. W. S. LAING. A. F. WRIGHT.

First National Bank,

OF IRON MOUNTAIN, MICHIGAN.

CAPITAL, $50,000.00. SURPLUS AND PROFITS, $15,000.00.

Solicits Accounts, makes Collections, Allows Interest on Deposits.

Discounts Commercial Paper,

Loans Money on Approved Collaterals,

ISSUES DRAFTS AND MONEY ORDERS ON ALL PARTS OF THE KNOWN WORLD,

and in every way, not interfering with its own well-being

and doing, accommodates its patrons.

STEAMSHIP TICKETS.

Real Estate.

* * * *

McLAUGHLIN & DE VERE,

Oldest Real Estate Office in the City.

Real Estate Bought and Sold on Reasonable Terms.

WE HAVE THE MOST DESIRABLE ADDITIONS TO THE CITY FOR SALE.

McLAUGHLIN & DE VERE.

* * * *

For Remunerative Investments
Seek Us.

LAWNDALE!

A. B. GEILFUSS, OWNER.

CHEAP LOTS ARE OFFERED IN THIS BEAUTIFUL ADDITION TO IRON MOUNTAIN, ON

Long Time and Easy Payments.

WARRANTY DEEDS WITH PERFECT TITLE CAN BE GIVEN TO ALL WHO DESIRE TO OWN PROPERTY IN THIS CHARMING LOCALITY.

This Plat embraces a whole half mile bordering on the Western portion of the city, and is intersected by all Streets extending West, from "Flesheim on the Hill" to "D Street in the Valley," and the furthermost limits can be reached by pedestrians within fifteen minutes' walk from the Mines, the Post Office and principal stores. The surface is mainly level, soil is rich sandy loam, suitable for the easy culture and maintenance of lawns, flowers and other garden products. Its Streets are being graded and sidewalks laid on the principal thoroughfares at heavy expense to the owner. LAWNDALE is destined to be the principal residence addition about Iron Mountain. On A and B Streets the Contracts and Deeds to purchasers will prohibit residences being built within 25 feet of line of Street; considering the Improvements already made, and others contemplated, we recommend Investments in this Plat. The lots are sold on Easy Terms: no smaller payment than $10.00 being received. Plats free on application. Address,

A. B. GEILFUSS,
Cashier Commercial Bank,
MILWAUKEE, WIS.

OR,

GEO. McKINSTRY, Resident Agent,
203 B Street, IRON MOUNTAIN.

The Iron Mountain Insurance Agency,

OFFICE AT FIRST NATIONAL BANK,

DOES A GENERAL INSURANCE BUSINESS.

REPRESENTING THE FOLLOWING COMPANIES:

	ASSETS.
TRADERS INSURANCE COMPANY, of Chicago	$1,345,574 75
LIVERPOOL AND LONDON AND GLOBE, of Liverpool	6,793,576.00
LONDON AND LANCASHIRE, of London	1,615,641.00
IMPERIAL, of London	1,583,450.00
LONDON ASSURANCE, of London	1,543,995.00
HAMBURG-BREMEN, of Hamburg	1,129,604.00
COMMERCIAL UNION, of London	2,716,029.00
NORTH BRITISH AND MERCANTILE, of London	3,347,802.00
GERMAN-AMERICAN, of New York	5,286,249.00
BOYLSTON, of Boston	909,878.00
GERMAN, of Freeport	2,187,173.00
CONNECTICUT, of Hartford	2,163,717.00
AMERICAN, of Philadelphia	2,401,956.00
FIRE ASSOCIATION, of Philadelphia	4,512,782.00
GRAND RAPIDS, of Grand Rapids	275,595.00
WESTERN, of Toronto	1,039,232.00
NIAGARA, New York	2,237,492.00
HARTFORD, of Hartford	6,576,616.00
INSURANCE COMPANY OF NORTH AMERICA	8,951,518.00
PENNSYLVANIA INSURANCE CO.	3,485,310.00
CONTINENTAL INSURANCE CO.	5,587,949.00
NORWICH UNION INSURANCE CO.	5,008,237.00
ORIENT INSURANCE CO.	1,939,223.00
SUN FIRE INSURANCE CO.	9,135,004.00
PHOENIX ASSURANCE CO.	7,430,536.00
QUEEN INSURANCE CO.	6,845,120.00
MICHIGAN FIRE AND MARINE INS. CO.	841,713.00
NORTHWESTERN NATIONAL INS. CO.	1,579,717.00
NEW YORK UNDERWRITERS INS. CO.	3,726,345.00

AMERICAN EMPLOYERS LIABILITY INS. CO.
LLOYDS PLATE GLASS INS. CO.

Any and all Business intrusted to our care will have Prompt and Careful Attention.

LOSSES PROMPTLY AND EQUITABLY ADJUSTED.

L. T. STERLING, MANAGER.

E. L. PARMENTER, PROPRIETOR. F. C. COLE, MANAGER.

CAR LOTS A SPECILATY.

LARGEST STOCK ON THE RANGE.

The City Lumber Yard,

IRON MOUNTAIN, MICH.

ROUGH AND DRESSED LUMBER, FLOORING, SIDING, SHINGLES, LATH, SASH, DOORS, MOULDINGS, ETC.

TELEPHONE.

MILLS AT INGALLS AND VULCAN MICH.

WM. HOCKING,

DEALER IN THE FINEST

IMPORTED WINES, LIQUORS AND CIGARS

POOL ROOMS IN CONNECTION.

Stephenson Avenue and Brown Street.

"THE BESSEMER,"

THE RANGEMANS' RESORT.

CHOICEST FOREIGN WINES AND LIQUORS

Finest Brands of Cigars. Imported Ales and Export Lager.

SOL. NOBLE.

Opposite Wood's Stone Block. - - Ludington Street.

M. C. GLEASON.

DEALER IN

Imported and Domestic Liquors,

WINES, ALES AND CIGARS.

THE CHAPIN HOUSE,

MERRIT BROS.

DEALERS IN

WINES, SPIRITS AND CIGARS

STEPHENSON AVENUE.

HASTINGS & HANCOCK,

—DEALERS IN—

FRESH, SALT AND SMOKED MEATS

Poultry, Lard, Butter and Eggs. Fruits and Vegetables in Season.

BROWN STREET, - - IRON MOUNTAIN.

CHAPTER V.

(CONTINUED.)

THE TOWN OF FLORENCE, WISCONSIN.

THE traveller taking the morning—Chicago & Northwestern—train, which passes Iron Mountain at eleven, reaches Florence in ample time to take a constitutional and "do" Central Avenue before repairing to his hotel for his mid-day meal.

On the way to Florence, which is thirteen miles northwest of Iron Mountain, and at an additional elevation of 158 feet, you pass through a park country, diversified by stretches of forest, whose tall hardwood and tamarack trees, wave their October crests golden as tassels of ripe wheat, over the mirrored bosoms of countless lakes which spread their bare breasts iridescent as a peacock's tail, with the loud reflections of flaming woods. Four miles out and you cross the Menominee river and enter Wisconsin, and also upon a stretch of idyllic scenery. At Spread Eagle Lakes, half way between the two towns, you get a glimpse of the celebrated wastes of water remarkable for the fish which frequent their silent pools, the charming diversity of their shore line, and for the reason that people of note in the world of finance and fashion, make annual pilgrimages hither, attracted by its righteous reputation. Here is a summer hotel kept by Mr. Chainey, whose steam-launch connects with the trains, and who equips camping parties with boats and other necessary paraphernalia. Five miles further and you reach Commonwealth, where in obedience to the demand of the miners, a village has sprung up alongside the ore-bed which is responsible for its nomenclature. The attractions of Commonwealth are not apparent to the traveller. They rest beneath the surface. Practically, it is an adjunct of Florence, from which it is only one mile distant. Up to this latter point your way has been parallel with and in places but a few yards distant from the line of the Escanaba, Iron Mountain and Western railway, built by the Schlesingers, and sold to the C. & N. W. people. As yet, it is ironed only as far as Lake Antoine. One mile further and you swing into the spur track and pull up alongside the station platform and within pistol shot of deep Fisher Lake. We know the origin of this town's baptism. Stroll with me up its main thoroughfare, and listen to the brief tale of its endeavor.

In October, 1873, as previously related, Mr. H. D. Fisher of Menasha, discovered the mine, which is located on the N. ½ of N. E. ¼ of Sec. 20, T. 40, R. 18. This was first known as the "Spread Eagle." The property then acquired also included S. E. ¼ and N. W. of N. E. ¼ of Secs. 21, 40, 18. Subsequently Messrs. Hagerman and Van Dyke secured by purchase a three-quarter interest in the property. In March, 1880, Mr. Fisher laid out the town site, and the same month placed a bunch of lots upon the

market. "We'll put 'em in at government prices," said the "man from Menasha," "$100 for the ordinary lots, and $150 for the corners. Who wants 'em?" It would be nearer the mark to say, who *didn't* want them, for in sixty days Mr. Fisher had sold $60,000 worth of his realty. The population at that time was about 50 people. Originally part of the counties of Marinette and Oconto, a new county was created through this patriarch's efforts in 1882, of which Florence of course, is the county seat, and through the donation on the part of this progressive promoter, of 50 town lots for churches, school, and other humanitarian purposes, the news of its competing adolesence spread through the land. Amongst the earliest migrants to reach its aptitudes was Mr. William Noyes, who opened the first grocery on the south side of the old trail, who was followed by Mr. Chris. C. Olin, Mr. A. E. Guensburg, Mr. J. W. Molloy, Mr. Knecbone and others. The first two opened up extensive trading establishments almost simultaneously on opposite sides of the Main street, the latter confining himself exclusively to dry goods, whilst Mr. Olin dealt in general merchandise. The experiences of the latter as related by himself are characteristic of the man and the conditions of the times; he hauled all his stock in trade from Quinnesec, over horribly bad trails, and considered three kegs of nails a full cargo. Originally located at the corner of Central avenue, he peddled goods whilst his travelling bazaar was tediously hauled up street to its present location. May 12th, 1880, the postoffice was established, with H. D. Fisher in charge, he himself carrying the mail over the old tote road from picturesque Quinnesec. Florence, at this time, was noted for possessing the best "rest" house on the range, the Spread Eagle House, kept by genial Jack Armstrong. It stood on the bank above Fisher Lake, out of whose dark waters sufficient bass and pickerel could be pulled out in fifteen minutes to satisfy a dozen backwoodsmen. The timber for its construction was hauled all the way from Marinette. The country was an undisturbed wilderness in the earlier days, not even a tote road, nothing but the half chopped out survey lines made by the government. But why re-draw the picture. From Waucedah up these early chronicles repeat themselves. Mining development hastened it to fruition, until to-day it presents to the investor in search of a "good thing" the following list of attractions:

MR. H. D. FISHER.

Florence village of to-day—it yet remains to be incorporated—comprises an area of 166 acres; the township of same name covers an area of 171,698 acres, and the county of Florence embraces a fruitful territory of 312,270 acres. Its exact location is on Sec. 21 and 28, T. 40 N., R. 18 E. The length of its streets according to County Surveyor C. S. Simpson, is eight miles, with an ordinary width of 66 feet. It is supplied with 6,800 feet of water mains, and 20 hydrants, and you can pursue your reflective perigrinations over its well kept sidewalks for four statutory miles. Besides the original Fisher location, the 1st and 2d Steele and Merrick additions, and that of Dr. Fortier

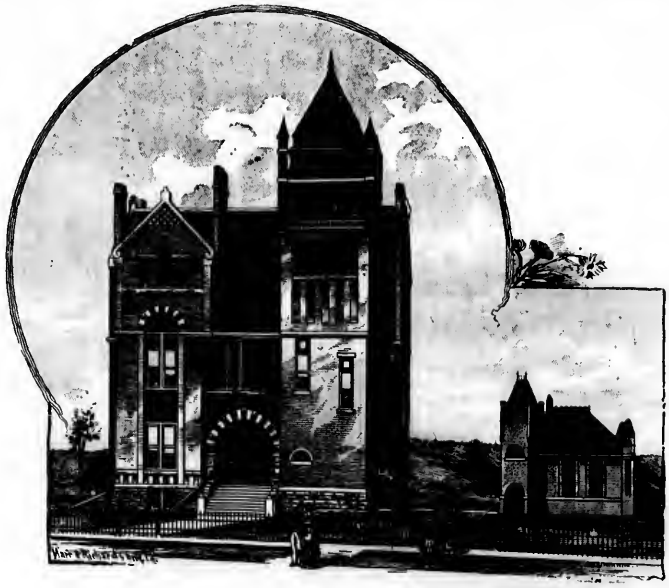
have been platted and attached for business and residential purposes. The water works which are situated on the lake front, consist of a Knowles pumping plant, which supplies sufficient power to throw streams of extinguishment to an altitude of 100 feet from eight hydrants at the same time. Mr. W. Noyes is Chief of Fire Department, which is outfitted with two hose carts, and 2,500 feet of hose. It has an excellent general system of waterworks, fed by the lake, which is a mile long. The town is lighted by electricity. Mr. F. R. Whittlesey is the postmaster, and handles weekly an average of 4,000 letters and 1,000 papers, etc.

The population of Florence is now nearly 2,000, and the volume of its business has been estimated at $500,000 per annum. Hitherto the bulk of the business done outside of that created by the mines, has been that exacted by the careless expenditure, by the "river-driver" and the "lumber-man." When it is known that 31,000 men are employed in the handling of Wisconsin saw-logs and lumber, and nearly 10,000 animals, an idea can be reached of the extent of the commissariat and general outfitting necessary to equip such an army of pacific devastation. Of the 5,407,934 acres of merchantable standing timber in Wisconsin, Florence county contains 287,966, consisting of white and Norway pine, hemlock, cedar, maple and birch. Of the grand total of all the state, 565,000 acres is covered with many varieties of magnificent hardwood.—I have been to some trouble as reference to the figures at the end of this chapter will show, to make a compilation of statistics bearing upon the timber resources of the states invaded by the Menominee Range.

The men who drive the logs down the rising floods of these highland rivers, their co-adjutors who fell the trees and do the log-rolling in the woods, together with the remainder of the legion engaged in kindred avocations, are an absolutely distinct and certainly peculiar people. From the "lumber-baron," who is reaping the reward of his earlier rude experiences, to the hero of the "sorting-boom," the head "river-god" of the "drive," the "mule-puncher" of the tote-road, or the prince of "pine-cruisers," they are for the most part made out of the same extra No. 1 quality material, and all of whole cloth. This same compliment cannot be extended to their garments, which though decidedly picturesque, betray an element of shoddy. In their parti-colored mackinacs, the members of this Zingari coated crew, of many nationalities, largely composed of Canadian French, when they undertake, as is their not unusual custom, to paint the town scarlet, never omit to make "Rome howl," and the echoes of these frequent centenaries seldom fail to reach Florence. When the lowering tides of the Michigammie offer no opportunity for log-driving, or when an insufficient snow-fall makes hauling an alleged impossibility, or when any excuse or no excuse presents itself; if his head aches, and he thinks a swig of "Jim Crow" will "knock it cold;" or it doesn't ache and he aches to let it ache, and knows that Kentucky sour-mash will "take the trick;" or he longs to "buck the tiger;" or, man of many impulses—perhaps somewhat negatively good—even his heart aches, why then he will *cache* his cant-hook and visit Florence, and there divert himself according to his mood, and to the limit of his physical manhood, and his "wad."

Florence has some fine public buildings. Its court house and jail, built of cream-colored bricks, with blue limestone trimmings, and metal-shingled roof, are handsome structures and show to advantage in the open square which surrounds them. They are

of course, built from designs of Architect Clancy, and costing only $21,000, grounds included, present probably better value received than do any other modern buildings in the peninsula. The registers of the public school, kept by the principal, Mr. E. D. Rounds, show a daily attendance of 306 pupils. Mr. Rounds is assisted by nine lady teachers. A library containing 600 volumes, is attached to the school house, which also contains a very fine assembly room, wherein are held divers legitimate entertainments. The School Board consists of the following gentlemen: A. K. Godshall, G. C. Youngs, Julius Boseman, Chas. La Salle, Mrs. H. Barnes, Nelson Norton and S. T. Beattie. The County Officials whose offices are located in the new court house are: Hon. Omer Hough, *County Judge;* Wm. Judge, *Sheriff;* E. W. Keyes, *Treasurer;*



COURT HOUSE AND JAIL, FLORENCE.

J. E. Parry, *Clerk;* Frank Waring, *Clerk of Circuit Court;* W. C. Haberkorn, *Registrar of Deeds;* R. Mitchell, *Coroner.* Mr. W. H. Clark is *District Attorney*, having been elected to office for 1885, 6, 7, 8 and 1891 and '92. Besides being the only resident lawyer, he operates extensively in realty.

Florence is under the executive control of a Board of Supervisors, composed of the following gentlemen who are zealous in their endeavors to promote the interests of their prospering town: Chairman, Mr. Charles Loughrey; Members, Mr. Edwin Ball and Mr. J. W. Molloy; Town Clerk, Mr. Frank Waring.

Mr. Loughrey is one of the oldest and shrewdest merchants in the place, and has held his office continuously since his election at the date of organization. The history of Florence is bound up with his name, as practically he is the civic father of the town, and is held in popular esteem from Quinnesec to the Gogebic. Mr. Ball is captain of the Florence mine, and as a practical mining expert is regarded as second only to Mr.

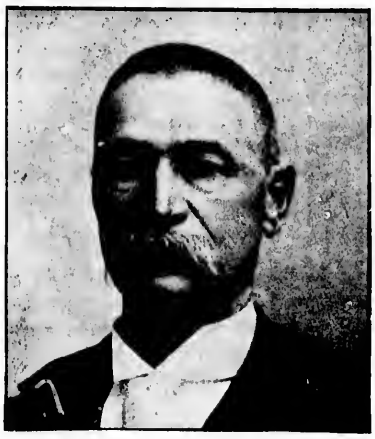
J. N. Porter, late general manager of the Florence, Iron River and Stambaugh mines, and holds the respect of the people. Mr. Molloy is the leading livery man of the town, and apart from his qualifications as a supervisor, he can, whilst equipping you with the breeziest road team on the range, entertain you with a string of the latest *risque* stories. To kindly and popular Frank Waring, the Board's trusted advisor, I am as elsewhere mentioned, under obligations.

The Florence *Mining News*, established in 1881 and published by Mr. Geo. C. Youngs, is accepted, and with good cause, by outside mining circles, as an authority on the subject of range development, and is a material factor in the advancement of local interests. The *Mining News* was originally established by Mr. Atkinson in 1880, who

DR. COOK'S HUNTING CAMP.

sold his interest to Mr. Chase Osborne, now of the Sault Ste. Marie *News*, and Mr. J. J. Tower in 1883, who in turn disposed of the good will to Mr. Geo. Youngs, the present proprietor, in 1887. The assessable property of the town, as equalized, amounts to $771,000, and its rate of taxation lower, it is claimed, than any other town on the Menominee. At the junction of the Michigammie river with the Brule, a little over two miles distant, the waters rush over a fall of 65 feet, presenting endless power for the driving of machinery suitable for converting the utilizable trees of the forests, into pulp, and every possible kind of manufactured woodenware. The Paint river falls also are only four miles from the railway depot, and the Pine river almost at its door. These dense thickets are the ambush of all the big game animals that have their *habitat* in the territory. Bears, wolves and fur-bearing mammals patrol under the gloomy arches of its pines, whilst the less combative but more curious deer frequent the clearings, into which the woodman's axe has invited the sunshine. Unchecked pot hunting under lax

laws was formally indulged in. In one year alone, Mr. Wm. Noyes shipped to outside markets venison worth $6,000. Stringent legislation and alert game guardians now place a check on indiscriminate slaughter. At the present time the only open month in Wisconsin for deer shooting is November; in Michigan it is October; hence from bank to bank of the Brule and the Menominee—the separating state boundaries—the wily hunter rafts his quarry to suit the emergency. Deer stalkers from all quarters congregate in these Wisconsin woods, for the climate, scenery and sport is without equal. For a season or two past Dr. A. J. Cook, of Cleveland, and a party of kindred spirits who have together hunted deer for many years and in many places, have chosen Florence county as their stamping ground. "Our party never looks for profit," writes the doctor, "and we never look for fur bearing animals, we simply enjoy an outing and yield for a few short weeks to a hereditary desire for the 'chase,' but the law which prevents a man from taking his game home, after permitting him to shoot it, and so deprives him of the opportunity of exhibition and distribution, robs him of half the pleasure." The difficulties of framing acceptable protective legislation is apparent. I introduce a view of Dr. Cook's camp, taken from life; it makes a characteristic hunting scene. Starting with the left hand figure the following are the names of these hardy exponents of woodcraft: Henry Carter, Ernest Peck, Harry E. Cook—the German *chef*—Charles McDermott (front) guide, John Beavis (rear), Jas. H. Peck, George Barnes, Dr. Albert J. Cook, and Charles Doolittle.



MR. CHAS. LOUGHREY.

The country adjacent to Florence is a bed of concealed mineral, and explorations are constantly in progress. Capt. Jas. Tobin, who first opened up the Commonwealth, has recently developed the Mayflower, two and one-half miles southeast of Florence; O. C. Davidson, F. R. Whittlesey, J. E. Parry, W. A. Curry, G. M. Keyes, F. Waring and P. McGovern, being interested. Wm. Noyes and others at the Buckeye on the W. ½ of S. E. ¼ of Sec. 33, T. 40, R. 18, have from a 96-foot shaft drifted into a first class showing. On the S. E. ¼ of Sec. 25, T. 40, R. 17, the Baird Mining Co., composed of the Guensberg Bros., M. St. Peter, of Iron River, and A. Lustfield, of Crystal Falls, have, after sinking 65 feet, produced a stock pile of 300 tons of black magnetic ore, analyzing 64 metallic iron. The country is alive with such instances but the discoverers as a rule, endeavor to keep their operations a close secret.

No statistics in answer to my request have been furnished by the officers of either the Commonwealth or Florence mines. The officers of the latter are: *Pres.* Jno. Scott, N. Y.; *Superintendent*, S. T. Beattie; *Captain*, E. Ball. Last year it employed 580 men, and produced from its five shafts 213,570 tons of non-Bessemer brown hematite, giving 61 per cent. of iron. Its total production since the date of first shipment in 1880, is 960,065 tons. The royalty now paid by the operators is 24 cents on every ton of ore

over 15,000 mined, and 40 cents on a minimum output. A three-fourths interest in the Florence was sold last year for $350,000 cash to the Schlesinger Syndicate. The Commonwealth mine produced last year 116,786 tons. In 1880, the first year of operation it produced 9,643 tons. Its total to date is 717,344. Otto C. Davidson is Superintendent.

Facts of interest and worth knowing, in connection with the timber product of the United States.—Compiled from official sources, with especial reference to the states of Michigan and Wisconsin, and the Menominee Iron Range:

In 1890 the number of Mills, Factories, etc., in Michigan was	1,957
" " " " Wisconsin was	863
Capital invested in Michigan	$111,302,797
" " Wisconsin	84,586,623
Average number of Hands employed in Michigan	44,000
" " " " Wisconsin	31,000
Wages paid in Michigan	$ 12,813,335
" " Wisconsin	8,813,188
Total value of Products and Re-manufactures in Michigan	$ 68,141,189
" " " " " Wisconsin	49,547,410

The town of Menominee ranks *second* in the six principal lumber producing cities of the Northwestern States. In 1880 it ranked *sixth*, showing a total value of $1,294,834; to-day its value of mill products is placed at $4,208,689. The product of its sister city of Marinette, on the opposite side of the river in Wisconsin, is valued at $2,420,891. The consumption of timber at these two points, in 1890, was 450,000,000 feet. Lumbering establishments in these places yet own about 4,000,000,000 feet of standing timber.—A sufficient supply for another decade.

In the woods of Michigan 9,240 animals are employed in logging, etc.; in Wisconsin the number is 9,936

In Michigan there are 101, and in Wisconsin there are 45 establishments engaged in the following industries, viz.: The manufacture of handles, chair-stock, etc., tubs, pails, churns, miscellaneous wooden ware, hoops, paving blocks, hubs, spokes, wagon stock, agricultural implements, etc., with an aggregate business valued at $2,924,809 and $2,206,024 respectively.

Not one cent's worth of these necessaries are manufactured in the towns of the Menominee Range. Who will come and experiment for one tithe even of the local trade now begging for local manufactures?

In Michigan the number of establishments using water power exclusively is 138; in Wisconsin 137.

During the decade ended May 31, 1890, it is estimated that in Michigan 69,867 acres of timber were burned over by forest fires, and in Wisconsin 46,341, killing an estimated 344,925,000 feet (board measure) of standing timber.

In Michigan 279 miles of logging railways are operated; in Wisconsin 100 miles.

The estimated area of merchantable timber lands in all Michigan to-day is 4,040,343 acres. Of 700,000 acres of Forest in IRON county, tributary to Crystal Falls, 450,000 acres is covered with merchantable timber.

The merchantable timber of Wisconsin covers an area of 5,407,934 acres. Of this FLORENCE county contains 287,966 acres out of an area of 307,806 acres of forest land, and tributary to the town of FLORENCE.

Michigan contains about 2,602,565 acres of pine land, white and Norway (standing timber); 218,486 of hemlock; 91,067 of cedar, 413,545 of various soft woods; 10,025 of oak; 81,299 of beech, birch and maple; 1,238 of ash; 35,199 of elm and 586,919 acres of various hard woods.

Wisconsin contains about 4,194,308 acres of pine land, white and Norway (standing timber); 126,658 of hemlock; 14,100 of cedar; 607,476 of various soft woods; 20,195 of oak; 9,960 of beech, birch and maple, 1680 of elm, and 433,557 acres of various hard woods.

The huge crucible of wealth formed by the valley of the Menominee Range, is boiling over with the profitable essence of trade, who will come with the ladle of industry and grow rich on even the skimmings of its present waste?

FLORENCE, WISCONSIN.

It is the ***County Seat*** of Florence County.

It has a population of 2000.

It has a ***Weekly Newspaper.***

Ten years ago it was practically a forest; to-day it is lighted by ***Electricity,*** has a well-equipped ***Fire Brigade*** and has a good system of ***Water Works.***

It has 8,000 yards of ***Sidewalk.***

It has a ***High School,*** costing $10,000.

It has ***three District Schools.***

It has ***one Presbyterian Church, one English Methodist, one Swedish Methodist, one Lutheran, and one Roman Catholic Church.***

The yearly ***Retail Trade*** of Florence is estimated at $1,000,000.

It has a ***Theatre*** and an ***Opera House.***

Its ***Assessable Property,*** as equalized, amounts to $771,000.

Its rate per cent. in ***Taxations*** is the ***lowest*** of any town in the Menominee Range.

It has one of the ***largest Mines*** in the Menominee Range, within one-quarter of a mile from the village.

Its facilities for ***Water Powers*** cannot be excelled.

It has thousands of acres of ***Mineral Lands*** yet unexplored. Options can be obtained on these lands at a ***Reasonable Royalty*** for the purpose of exploring for mineral.

It offers ***Inducements*** to manufacturers for erection of ***Factories,*** etc.

It is within two miles from the ***Commonwealth Mine,*** one of the ***leading*** shippers on the Range.

It has several very ***promising explorations*** within four miles of the Village.

It is near the mouth of the Paint, Pine, Brule and Michigammie Rivers, where all the principal ***Log Driving*** is carried on.

Its ***Insurance rate*** is from one to five per cent., the leading board ***Insurance Companies*** being represented.

CHAS. LOUGHREY,
EDWIN BALL,
J. W. MOLLOY,
Board of Supervisors.

FRANK WARING,
Town Clerk.

SCHOOL HOUSE, FLORENCE.

FLORENCE BUSINESS DIRECTORY.

CLASSIFIED LIST OF ADVERTISERS.

Attorney—
CLARK, WM. H

Bank—
STATE BANK OF FLORENCE,
E. E. Wilcox, Cash'r.

Butcher—
KNEEBONE, R. J.

Civil Engineer—
SIMPSON, CHAS. S.

Dry Goods—
GUENSBURG, A. E. & E.

General Merchants—
NOYES, W. W.
OLIN, C. C.
SMITH & LOUGHREY.

Livery—
MOLLOY, J. W.

O. C. DAVIDSON, Pres't. H. D. FISHER, V.-Pres't. E. E. WILCOX, Cashier.

DIRECTORS.

Peter McGovern, H. A. Hansen, O. C. Davidson,
Oliver Evans, E. E. Wilcox, Charles Loughrey,
H. D. Fisher.

State Bank of Florence,

CAPITAL, $30,000.00.

A GENERAL BANKING BUSINESS TRANSACTED

Drafts at Lowest Rates on all parts of the Old Country, also on Chicago, Milwaukee and New York.

CHARLES S. SIMPSON,

PRACTICAL CIVIL ENGINEER,

LAND SURVEYOR AND DRAUGHTSMAN,

FLORENCE, WIS.

Surveyor for Florence County, late Draughtsman for E., I. M. & W. R. R. Nine Years' Experience on the Menominee Range.

Mine Surveying, Town Sites and Additions Platted, Mineral and Timber Lands Examined. Surveys made for Projected Railway Lines, or River Improvements.

W. W. NOYES,

DEALER IN

Groceries, Provisions, Flour, Etc.

CENTRAL AVE.,

FLORENCE, WISCONSIN.

ALL KINDS OF

FURS AND DEER HIDES

BOUGHT AND SOLD.

ESTABLISHED 1880

J. W. MOLLOY,

LIVERY,

SALE AND EXCHANGE STABLE,

ALSO JOBBER IN

PINE LUMBER,

CENTRAL AVENUE, FLORENCE, WIS.

A. E. & E. GUENSBURG,

PROPRIETORS OF THE FAMOUS

"CHICAGO STORE."

THE OLDEST DRY GOODS STORE NORTH OF THE MENOMINEE RIVER,

Enjoy the Reputation of Carrying the Largest and Best Stock of **Dry Goods, Clothing,** BOOTS, SHOES, HATS, CAPS, FURNISHING GOODS, CARPETS, TRUNKS, ETC., on the Range.

SPECIAL ATTENTION IS GIVEN TO

SUPPLYING LUMBER AND EXPLORING CAMPS.

GOODS IN LARGE QUANTITIES SOLD AT WHOLESALE PRICES.

ESTABLISHED 1880.

SMITH & LOUGHREY,

GENERAL MERCHANDISE,

Lumbermen's and Mining Supplies,

FLORENCE, WIS.

C. C. OLIN,

DEALER IN

Groceries, Dry Goods, Clothing, Boots and Shoes,

HATS AND CAPS, CARPETS, ETC.

R. J. KNEEBONE,

DEALER IN

Fresh, Salt and Smoked Meats,

VEGETABLES, BUTTER, EGGS.

POULTRY AND GAME IN SEASON.

QUINNESEC STREET, *FLORENCE, WIS.*

Real Estate Agent.

WM. H. CLARK,

Attorney and Counsellor,

FLORENCE, WIS.

Commissioner of Deeds for Mich. COLLECTIONS A SPECIALTY.

CHAPTER V.

(CONTINUED)

THE TOWN OF CRYSTAL FALLS, MICHIGAN.

GEOGRAPHICALLY, almost last on the list of urban attractions which I promised you, but somewhat like the postscript to a woman's letter, in the matter of its importance, Crystal Falls, the judicial seat of Iron County, now insists upon your undivided attention.

Nine miles from Stager, the junction of the Iron River branch with the Falls branch, and which junction is six miles from Florence, this unincorporated mountain town of refuge for crystal streams, mineral waters, astute explorers, and keen men of business, lies on the slope of a high hill's summit, and with its painted modern residences, a melangè of yellows, browns, and blues, appears to the traveller if he approaches by the wagon road from the east bank of the Paint river, like a marigold or a huge marguerite planted in a bed of living moss, with its lofty Court house—whose foundations rest on an elevation of 230 feet from the river's level—peering from the city's centre a petal of masonry. The railway station at Crystal Falls is 52 feet above Florence, and 760 feet above Lake Michigan. This altitude you can within ten minutes walk increase by 300 feet additional if you care to ascend the clock tower of its noble court building, from the open gallery of which the kneeling lands of the adjacent country—exaggerated tidal waves of greenest vegetation—go rolling and skipping, a sea of curving mountains into near and very heavenly horizons.

Whether any such exalted ideas as these entered into the considering caps of Silas C. Smith of Marquette, who is credited with being the first discoverer of ore in the district, or of Col. Whittlesey, who exploited the country in the early '60's, it is not my province to determine. How these tales of discoveries later led to actual development is explained by Mr. A. P. Swineford (Annual Review of Lake Superior Mines, 1881) who quotes John N. Armstrong as the first practical pioneer, and whose investigations led to the development of what is now the Mastodon, and of the Shelden and Schafer, which subsequently became the Union mine. Mr. F. G. Clark, county surveyor, writes that "early in 1880, the Maltby Bros. and Ephraim Coon took an option on that portion of Sec. 20, T. 43, R. 32, now known as the 'old Crystal Falls mine,' and worked it

until the following October, when they surrendered the option to Geo. Runkel and S. D. Hollister." Both of these latter gentlemen played an active part in the amplifying of other discoveries, and were largely instrumental in the creation and early growth of this physically gifted village. Contemporary with these operations, Capt. Frank Raher, another mining expert who had graduated in the Norway district in the earlier days, reached the Falls in the winter of 1880, directed hither, as he told me by enterprising Mr. Breitung. He located on this same Sec. 20, on which he built a log shanty, and with his party of five traversed the Paint river until he discovered, after a few months' exploring, a mine, which was christened after the stream whose boisterous torrent washed its base. The option for this was secured for Mr. Breitung, Mr. John McKenna and Dr. Bond. In 1881, this indefatigable inquisitor laid bare in Sec. 21, the hitherto hidden secrets of another deposit, the Great Western, ordinarily known as the North Star. The option of this was secured by Geo. Runkle, S. T. Hollister, and A. C. Hall. These two were the first mines operated in the district, but their example helped to inspire other operators to more heroic efforts, for with the advent of that prince of colonizers, the Chicago and Northwestern railway, a branch line of which was constructed from Stager, to tap this hot bed of hematite, seven mines in 1882 were ready to practically embrace transportation opportunities, and that season jointly shipped of their superlative minerals to eastern furnaces, 42,111 long tons. These were the Crystal Falls, Fairbank, Great Western, Mastodon, Paint River, Shelden & Schaefer and Youngstown, and thus from these northern peaks—a mineral empyrean—was fired the first industrial rocket which was destined to inflame with its magnitude, the attention of those of the world of capital who hastened to surrender their "collateral" as hostages of their working intentions.

COURT HOUSE.

The creation of Crystal Falls as a town-site, is due to the implicit confidence in its future, entertained by S. D. Hollister, Sr., and George Runkel, who reached the place September 18, 1880. Here their premeditated jaunt into the Agogebic country was forgotten in the astounding discoveries as related to them by Henry Maltby. Realizing that the region was inconceivably rich in iron ore, they organized the Crystal Falls Iron Company, and together with Jas. H. Howe, purchased the land upon which a portion of the village now stands, from Guido Pfister, who had bought originally direct from the government, and in 1881 commenced to lay out the property in town lots. Close upon their heels came J. E. Bower, druggist, in June, 1881, who erected the first building in this backwoods camp. This was a cottage for Mr. Runkle, and stood—and for that

matter yet stands, disguised with modern adornment—under the same roof as that of the present handsome residence of Capt. J. C. Roberts, at the head of Superior street, upon which highway there stood the camp of loggers and axemen, engaged in cutting out this leading thoroughfare. All of the personal effects brought by Mr. Bower at this time had to be "packed," carried on the shoulders, tied with a "tump line,"—a broad leather strap which rested on the forehead—from the nearest bridge over the Brule river, nine miles distant. In 1881 the prospecting population came by stage from Florence. In the spring of 1882 the very wolves trembled in their lairs on the heights that overhung the roaring Michigammie, for above its tumultuous din the scream of the first locomotive awoke the sleeping bears a month too soon, and established direct business communication with the world at large. In 1881 came another pioneer, a man of push, experience and prominence, in the person of Jerome B. Schwartz. Mr. Schwartz, it will be remembered, was referred to in Mr. Whitehead's narrative, as captain of the Breen Mine at Waucedah in 1877. Of this same Mr. Schwartz it was written in Swineford's *Annual Review*, 1880,

MR. JEROME B. SCHWARTZ.

in reference to his connection with the Vulcan mine, "that had he been possessed of the power to see plainly through a hundred feet of drift and rock, it is doubtful if he could have done better in his opening up of the mine in its different parts." As a mineral detective, Capt. Schwartz made himself notable in his new home. He discovered the Alpha, exploring on his own account the Maggie, Windfall, Lincoln and Volunteer, but considering that he had charge of the Tilden mines at Negaunee as far back as 1865, the degree of his prescience is not astonishing. He erected a store, also, and embarked in a general business, for though subsequent to railway connection, there were but forty persons residing in the town plat proper, some 600 men were employed in the mines, and at the saw-mill, whilst back in the woods, hundreds of men were occupied in getting out the saw-logs. During the period that followed, Mr. Schwartz realizing the future of Crystal Falls, invested extensively in real estate, acquiring the "addition" which is known by his name, and continuously prospered, finally building a handsome residence on Fifth Street, at a cost of $8,000—which for interior decoration and finish has scarcely an equal north of Milwaukee—and ultimately being elected to the presidency of the Village Board. The opportunities thus shrewdly embraced by Mr. Schwartz, still present themselves in a more alluring and desirable form, in the Crystal Falls of to-day, which offers advantages of signal singularity to the wise ones who will industriously study its special list of commercial possibilities.

Though the good people of Crystal Falls are terribly addicted to the wholesale consumption of the perennial waters of their native spring, towards which it is no uncommon sight to see a procession of citizens—an army of cup bearers—marching for a matutinal drink down Superior Street, there are yet some who find comfort in a good

cocktail, a taste acquired possibly in the days of Tony Hardinge, who was the first saloonkeeper in the precincts, and which acquirement partly from curiosity and certainly more through force of habit than carnal desire, is yet occasionally manifested by some estimable citizens in a visit to Doucet's modern sample room, from whose windows the mineral water contingent—residents and tourists—can be seen renewing their vitality at the Sulphur Springs on Mr. Schwartz' corner lot opposite. For some time past it has been an open question whether Crystal Falls will eventually obtain greater prominence from its being the focus of an extraordinary number of active mines, or from the fact that it is the site of a wonderful spring, whose healing waters uninterruptedly gush from a natural fountain at the foot of its main street, where it offers its calcic flood—a tested pool of Siloam—to afflicted humanity. Judge Grant, a short time since, sent samples of this water to Professor V. C. Vaughan, Ph. D. M. D. of Hygiene and Physiological Chemisty; Director of the Hygienic Laboratory, University of Michigan, Ann Arbor, for analysis. The following is Mr. Vaughan's verdict:

The water is clear, odorless and neutral.

	Grains per Gallon.		Grains per Gallon.
Total solids	11.66	Sodium Chloride	0.64
Loss by ignition	3.09	Potassium Chloride, traces	
Residue after ignition	8.57	Silica	0.37
Free Ammonia	0.003	Alumina	0.09
Calcium Sulphate	2.33	Nitrates and Nitrites absent	
Calcium Carbonate	4.04	Organic matter	1.06
Magnesium Carbonate	3.14		

This is a good Calcic water. The Crystal Falls water contains less organic matter, Alumina and Silica than the Bethesda, and these are decided advantages. Moreover, the large amount of Calcium Carbonate in the Bethesda water is not a virtue. On the whole, I should say that the comparison is favorable to the Crystal Falls water.

Respectfully,
[Signed.] V. C. VAUGHAN,
Prof. Chemistry Ann Arbor University.

Mr. Peter Larson of Florence, a practical interpreter of "what's what," with a degree of business foresight, which in the light of results can only be regarded as second sight, has established bottling works alongside the spring, and as the potency of its qualities have reached a more than local fame, he has had to enlarge his works in order to meet the demand for this bottled elixir. Already travellers from afar visit the place solely for the purpose of indulging in its systematic potation, and as according to Dr. Vaughan it excels the celebrated Bethesda water of Waukesha, it is only a matter of time before its use becomes universal among the suffering multitudes, whose physical clock-work needs simple but heroic cleansing.

* * * * * * * *

During the year which witnessed the incoming of the iron horse, multitudes of men as a sequence followed. This new mineral Mecca presented a combination of attractions, in variety somewhat to the more stereotyped inducements offered by its eastern rivals. It was newer, indeed it was the newest, and it was odd, from a pictorial standpoint essentially odd; for it rested on the tilted mountain side, aggravatingly like a good-looking girl in a ship's deck-chair, waiting to be embraced with all its wealth of native charm. And men of all nations and of as many varying degrees in the matter of pluck, wisdom, acquisitiveness and capital, as there are eggs in an ant-hill, came along and—embraced it.

MR. H. W. HARTE'S RESIDENCE.

In 1881 arrived D. C. Lockwood, D. Bannerman and Dr. H. C. Kimball and Mrs. Kimball, the first resident lady in the place; then Al. Austrian, O. O. Welch, R. Dawson, L. M. Tyler, Frank Scadden, Dr. J. L. Kimball, Martin Ragan, J. H. Elmore, Charles Henry, K. S. Buck, now of Iron Mountain, W. Doucet, now proprietor of the Crystal Falls Opera House, the best of its kind on the range, and as an absolutely first-class "show" hall, second to none on the peninsula. Following these, Nicholas Lachapelle, restaurateur, surrendered to the picture presented, as did Dr. A. A. Metcalfe, a successful practitioner, whose reputation preceded him. Chas. Gallagher, J. P. and Ex-Deputy Sheriff Walsh fell into line, and joined the procession up the slope, in the footsteps of Andrew Vandandaigue, who built the second dwelling house in the village, in August, 1881. J. Brown the "wet goods" merchant arrived in 1882 with a view to "qualifying" the effects of the mineral water, and on his tracks came Carl Pardee, Wm. Russell, R. Flood, Geo. Freman and Captains W. H. Morrison and Frank Proker. In October of 1882, Mr. E. E. Dunn, discoverer of the Metropolitan Mine, and now Registrar of Deeds and County Clerk, commenced exploring on the Youngstown—the old Brier Hill—Mining Co.'s property, later discovering the Clare Mines. Mr. Dunn was elected to office first in 1886, and still remains in harness in evidence of popular opinion. His declaration as to the richness of the district is worth framing. "A party of five or six," he asserts, "working continuously during the summer months at any time almost, would be likely to discover a mine. The inducements for explorations are inconceivably great."

One dilemma constantly confronts the would-be-recorder of facts in his recital of the daily chronology of a new city, namely the uncomfortable monotony presented by the ever recurring information pumped into him, with the regularity that the lever pumps cartridges out of a Gatling, from a certain class of citizens, who humbly confess all and every, that each mother's son of them, was the first squatter to reach the town. I have also met a dozen men who, one and all assured me, that they individually were the original

MR. SCHWARTZ'S RESIDENCE.

discoverers of the same mine.—But why abuse confidences?—I abstain from listing these gentlemen, as I have no desire to be party to what I feel would inevitably culminate in a horrible and bloody vendetta, and merely refer to the circumstance—having no special reference to the worthy burghers of Crystal Falls—to explain the ordeals which beset the bookmaker; if however, I should meet a man of the type referred to, who will swear that he has discovered less than all the mines in the Peninsula, I will present him, dead or alive, to the Smithsonian Institute.

In 1882, when hay was $22 a ton and the population 500, came Mr. John Fisher, the leading produce merchant of the place, now a member of the Board of Trustees, and a most estimable citizen, but his advent was anticipated by Mr. Fay G. Clarke, Mining

THE CRYSTAL FALLS, PAINT RIVER.

Engineer and County Surveyor, a "pioneer of more towns than one," and who at the time of the initial work on the Menominee River branch of the Chicago & Northwestern road, followed up the advancing civilization which ran a neck and neck race with the construction of the railway. For a practical and thorough knowledge of the northwestern territory of the Upper Peninsula of Michigan, Mr. Clarke has few if any equals, the examination of lands and the making of topographical surveys necessitating the traversing of a wide area of country. From information furnished by him, I am in a position to present the results of the concrete enterprise of the residents of the village. Since the date of its platting, August 6th, 1881, when and for some years after all was bush and dense thicket, 41,400 lineal feet of streets have been constructed, and—nearly eight miles—in constant use. Its sidewalks extend for 14,500 feet, whilst the wagon roads—highways—within the township—43, R. 32—in which Crystal Falls is located, are 26½ miles in length. Seventeen miles of railway intersect its prolific acres, for the country is not all rock, neither does the granger need to plant his potatoes with a shot

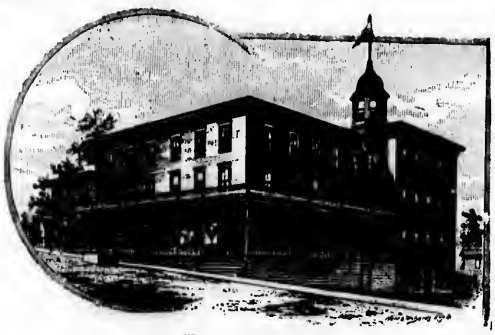
gun, as the fact that there are sixteen well cultivated farms within a radius of six miles from town, should indisputably prove. On Mr. Uren's farm within shouting distance of the Lockwood Hotel, there were raised this year, 3,000 bushels of potatoes, 100 tons of millet, 1,000 bushels of oats, 2,000 bushels of Swede turnips, besides garden truck. The oat stalks stood measurably higher than the tallest man. The soil is a rich sandy loam, and produced 65 cords of maple, bass and birch, to the acre. The estimated area of forest land in Iron county is to-day (according to extra Census Bulletin No. 5) 700,000 acres; 450,000 is said to contain merchantable timber, principally hard maple, with pine, cedar, hemlock and birch.

Mr. J. H. Parkes is one of the early pioneers, as well as one of the prominent men of the range. He reached Quinnesec on the first construction train, following the completion of the road to Florence, and reached Crystal Falls in 1884, being then in the employ of the Sawyer Goodman Co., getting out logs. Mr. Parkes subsequently bought out the old Bannerman Hotel, and fitting it up as a hardware store, soon controlled an enormous and lucrative business, supplying the mining and logging camps. Last year he sold out, and at present is engaged in logging on the Paint, Hemlock and Net Rivers, his annual cut of white pine reaching nearly 25,000,000 feet, and necessitating the labor of 300 men. Mr. Parkes is another example of Menominee opportunities and push.

MR. J. H. PARKES.

H. W. Harte also operates in lumber. Mr. Harte only reached the Falls in 1888, but at once embarked in the general store business. This he retired from in November, 1890, and started the yards now located on Third St. and in partnership with Mr. Gilman conducts a local wholesale and retail trade, supplying also sashes, doors, lime and cement. Last year this company sold 4,000,000 feet of lumber, the bulk of it for building purposes within the village, over $50,000 worth of material being put into residences, and handled principally by Mr. Kitto, builder, to fill his contracts for citizens. Of these Capt. C. T. Roberts' residence, corner of Superior and Fifth Sts., cost $5,000; Mr. Max Berlowitz' residence, corner of Michigan and Fifth Sts., cost the same; Mr. C. T. Crandall's house, same street cost $3,000; Mr. Russell's handsome home, $4,000; Mrs. J. F. Schafer's house, near Forrest Avenue, also cost $4,000. Mr. P. E. Dunn's celebrated Cedar Castle on Maple Hill, the interior fittings of which are said to be ultra original, cost $6,000; the residences of Mr. Ed. Florada, and Mr. S. D. Hollister, $1,500 each; Mr. Doucet's house on Marquette Avenue, $4,000, and Mr. Harte's own dwelling, at the corner of Forrest Ave. and Fifth St., taxed the owner $5,000.

Of this residence I submit an excellent picture, also one of Mr. Schwartz's wonderful house, to which I referred previously. All of these houses are fitted with every modern convenience; are most handsomely furnished with remarkable taste, and with their Dutch fire places, electric lights and stained glass casements, are very bowers of



"THE LOCKWOOD."

comfort, by the glowing side of whose ingle nooks, the thriving citizen can sip his toothsome toddy—he ought to if he doesn't—in the bosom of his own or some other fellow's family, and offer up thanksgiving for the circumstances which directed him to this prosperous haven in the hills. These houses, as I have said, are painted in the prevailing shades of orthodox tints, and seen from a distance, flaunt their colors like a bed of wild poppies. In the table of Real Estate values I have already given the prevailing prices of property at Crystal Falls. These prices are steadily rising, and with an increasing population, rated at 4,500 to-day, are bound to maintain an upward tendency. The quotations of to-day may not be law tomorrow. Several additions, as a matter of course, have been pinned on to the original town site—the Maple Grove, the Wagner and Carey, and most important the Glendale, which is within two blocks of the Court House. This is the joint property of H. W. Harte, Geo. Eisman and Mr. A. Flewelling, attorney, who is the representative lawyer and leading expounder of law in Iron County. This property is well wooded, and from a picturesque place of vantage, commands a magnificent view of the surrounding uplands. The main line of the electric light plant, and of the water-works, passes through Glendale. The water supply of Crystal Falls—I speak of the water-works product—is the united flow of four streams, which by damming create one general reservoir. There are 8,000 feet of water mains, and 17 hydrants, the pressure in which is maintained by powerful engines, though the elevation of the crest of the town, at the Court House, gives of itself more than ample power for the portion of the village situated below. The fire department, which is as yet a volunteer one, consists of three hose carts, two chemical engines with hook and ladder outfit. The development of these range towns is simply astonishing; one day an untrodden, howling wilderness, and within a twelve-month presenting a greater variety of necessaries and more modern luxuries, than cities of a former generation would have acquired in a life-time. The post-office at Crystal Falls, Mr. A. Parkes, postmaster, handles some 5,000 letters daily, and about 13,000 papers weekly; the business of the office amounts to over $60,000 a year. Complete choice is offered the Christian in the way of pursuing his own sectarian form of divine worship. The Catholic church which was built in 1885, is in charge of Father Sutter; the Episcopal Methodist congregation is led by the Rev. T. J. Macaulay, and the Swedish church of the same denomination is under the pastorate of Rev. H. G. Boivia. This latter congregation have just erected a new tabernacle on Crystal avenue at a cost of $2,250. There are some 500 Finlanders working in the mines. St. Mark's mission

A. LUSTFIELD'S STORE.

has lately been established under the visiting ministrations of the Rev. Ball-Wright, rector of the Episcopal parish of Menominee, with Mr. R. Munns, churchwarden, and Mr. C. M. Rogers and Dr. Metcalfe, lay readers. Neither in educational matters is Crystal Falls any less advanced than its sister towns of the Menominee. The High School, which is most picturesquely situated amid the elms and pines on Fourth street, is in the charge of Miss A. Blasdell, principal, aided by six lady assistants, all graduates from normal schools. The census shows a school population of 490, with an attendance of 330 boys and girls both included; twenty-eight of these are high school pupils.

THE HIGH SCHOOL.

The Village of Crystal Falls is under the local government of a Board of Trustees, composed of the following citizens: Jerome B. Schwartz, *President;* James Wilkinson, *Clerk;* A. Lustfield, *Treasurer;* J. E. Bower, Casper Aberle, John Fisher, Chas. S. Henry, Wm. Russell, C. G. Campbell, *Board of Trustees;* Hugh McLarren, *Marshall;* P. E. Dunn, O. M. Brown, *Assessors;* David Kitto, *Chief of Fire Department.* With the exception of that of Mr. Campbell, the advent of all of these, save one other, has been referred to. Besides being proprietor of the Stephenson House, Mr. Campbell recently acquired Mr. Bower's drug business, and in partnership with his son who is a graduate in chemistry from Ann Arbor, controls the trade. In all communities, there will always be found one or two men, who by reason of their enterprise and business activity, are rightly regarded by their fellows, as being wholly representative of local progress and trade interests. Such an one in the case of Crystal Falls is Adolph Lustfield, proprietor of the "Fair." Mr. Lustfield was born in Bohemia and after a successful career—consequent upon his own exertions—embarked for America and elected in March, 1882, to remove from Oconto, Wis., where he was engaged in business, to the present booming centre of his choice. By his own inherent push, aided by a happy disposition, he soon became the corner stone in the commercial world of Iron County, and I hasten to publish his successes, both on account of his personal worth and the value of his example, as proof of the possibilities of Crystal Falls, if properly embraced. Shrewd, just, an ever wise counsellor, and an unflagging worker in the town's interests, Mr. Lustfield's deeds should be perpetuated in letters of brass.

Crystal Falls, as I have related, is the judicial seat of the county, a list of whose officers I here append: Patrick E. Dunn, *Registrar of Deeds and Clerk:* J. F. Corcoran. *Treasurer:* C. T. Crandall, *Prosecuting Attorney:* W. J. Brown, *Probate Judge:* W. J. Tully, *Sheriff:* E. P. Lott, *Circuit Court Commissioner:* F. G. Clark, *County Surveyor.* The offices of these good people are in the Court House. I have shown you the appearance of the building by the zinc etching on page 129. One word as to its construction, It is built of cream colored brick with blue limestone trimmings. The small pilasters of polished blue granite which support the sides of the front archway, were quarried from the mountain of granite, which rests within stone's throw of the railway depot. The interior fittings are finished in antique oak, and the court room itself is the largest auditorium in the Upper Peninsula. The cost of the building will exceed $50,000. The site chosen is a magnificent one. The base of the building at the head of Superior street, is about a third of a mile from the railway track, and about 230 feet above the river. Surmounting the front pediment is an allegorical group of statuary, three figures seventeen feet high, *Justice,* *Law* and *Mercy*, appli-

MR. ADOLPH LUSTFIELD.

cable to the citizens and encouraging to the new comer. The architect of course was Mr. J. E. Clancy, of Iron Mountain. Alongside the Court House, a handsome jail has just been completed. These buildings contrast front the visitor—and appear strangely im-posing surrounded as the place is by the silent and everlasting hills—as he drives townwards from the station on his way to "The Lockwood," the hotel *par excellence* of the Menominee Range. "The Lockwood" is within hailing distance of the Court House, and commands an entrancing view of the neighboring mines, hills and forests. It has 55 rooms, and lighted with electricity, steam heated, and exceptionally well furnished, it deserves, under the admirable management of Messrs. Sax and Brazee, all of the eulogy bestowed upon it by the exacting tourist. Its cuisine breaks you up on the grounds of unexpected quality in so remote a capital, as do also—if you are of a susceptible disposition—the attractive goddesses in white who answer to your appeals in the dining room. Apropos of dining rooms, this one at the Lockwood, with its dazzling napery and printed menu, is in refreshing contrast to the menage of a certain range establishment where a crisp story is told of a tender traveller, who upon the announcement of "soup," was weak enough in the absence of a bill of fare to enquire, "What kind of soup, please?" The answer came terse and emphatic, "Dam' *good* soup, and don't you forget it."

Crystal Falls abounds in most picturesque highways, and at Hollister's livery barn, alongside the hotel, you can secure any kind of an outfit that your fancy dictates, and traverse all its umbrageous byways. Many of the elevated portions of the township consist of fields of argillaceous slate, changed by igneous action. On the Michi-

gamme river the cut banks of diorite, raise in places their 150 sheer feet of canyon wall, the increasingly high hills from which, mount upwards until their loftiest crests hang a purple-green gonfalon 1,800 feet—I am told—above Lake Michigan. The Caledonia Falls of the Michigamme above the Mansfield Mine, offer a dream in drench, rock and foliage. The glens along the dalles of these rivers are a thicket of deers' antlers, and the waters of lakes, rivers and brooks teem with whitefish and speckled trout, bass and herring. The Fortune chain of lakes is but four miles distant, whilst four miles further west yet the county road crosses the Chicagon river, the lake of which name rests a deep basin of several miles square in the heart of the great hardwood forest. The country in a word is a sandwich of scenery and sport, best described by a volume whose alternate pages would consist of leaves from Longfellow and the *American Field*, Bryant and *Forest and Stream*. If any one at a distance is anxious to learn more of these range towns I urge him to subscribe for one or more of its local papers. They are replete with reliable and with the latest information on every point. Crystal Falls possesses two such, *The Diamond Drill*, a five col. qto., when first established by Mr. Claude Atkinson in January, 1887, now fills up a seven col. qto., and a supplement in addition, and is the largest weekly in the Upper Peninsula, outside of Ishpeming. Mr. Atkinson's paper is an ably edited text book on Menominee Mineralogy; in addition to this the editor is a Nimrod and a most enterprising citizen. The *Clipper*, the old *Cycle*, though recently purchased by Mr. Andersen, has under his vigorous management acquired a new field of usefulness, and shares the journalistic honors.

At the time of writing, exclusive of express and telegraph offices, etc., and Drs. Beck and Moffit, and Mr. Kinney—Crystal Falls' Bank—there are about ninety persons engaged in various lines of wholesale and retail business. Of these, six are interested in the dry goods and clothing line, carrying stocks of from five to twenty thousand dollars, and do a business of $150,000 a year, whilst the three general stores carrying about an equal amount of stock, handle some $300,000 annually. Amongst other industries is the cigar factory of Chas. R. Kirbey, employing 15 hands, whose specialty the "Opera," is scattering its smoke and its reputation as far west as Washington Territory. Across the river is the new driving park with a first class half mile track. All the Benevolent Societies flourish, and the Free Masons and Knights of Pythias are especially live organizations.

Outside of the fact of its unrivalled richness as a mineral center, Crystal Falls is another of these range towns which present extraordinary inducements to the manufacturer of Wood or Iron, seeking the cheapest motor and the most profitable market for his product. The Paint river runs at the foot of the village, and the horse power above and below the Falls is estimated at 15,000. Now, the horse power of science is really three times greater than that of the animal itself. Seven men are equivalent to one horse unharnessed by science; hence the ordinary water power is equal to 45,000 cart horses, or the might of 300,000 able-bodied miners, provided their energies were not wasted by an all-night session of pedro. What a tug—not of war—but of industrial conquest. If, as the chronograph has proved, that a telegraphic signal can be propelled 7,000 miles in a fraction over one second, by a not extraordinary instrument, what manner of manufacturing propulsion could be produced by dynamos driven by 300,000 men? Crystal Falls offers the capitalist, contemplating starting a saw-mill or any kind of wood

working establishment, or blast furnace, the benefit of free power equivalent to one-half of the available united manual labor of all the working men of the city of Chicago! Who will come? At the present time—upon the authority of Mr. Parkes—about 125,000,000 feet of lumber are cut on the Paint and its tributaries. Who will locally convert a portion of this into the staple articles of necessity?

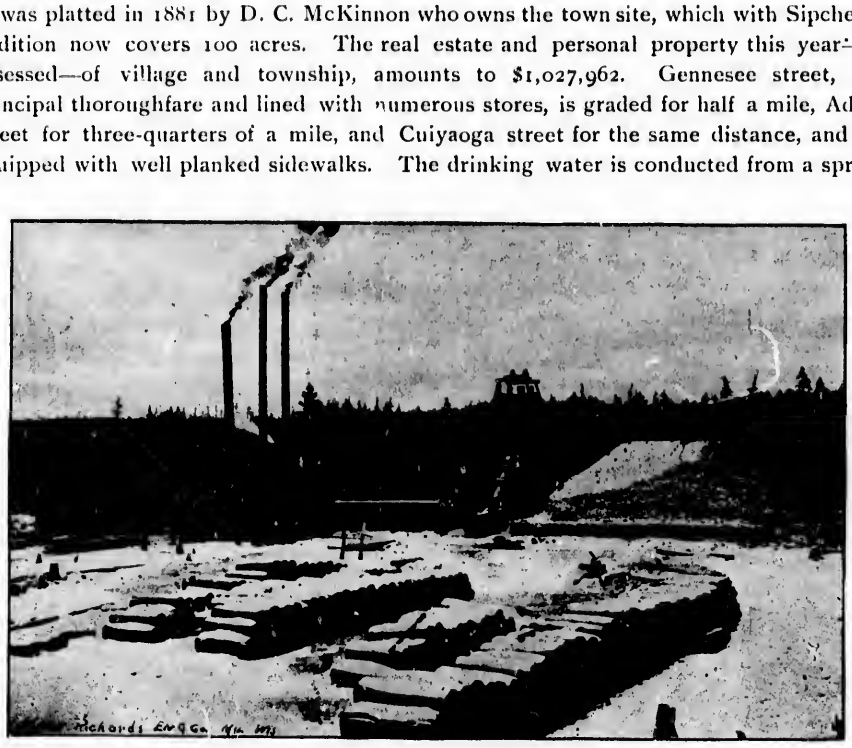
Crystal Falls, as has been previously reiterated, has the greatest number of shipping mines surrounding it than has any other district on the range, and the ores produced are of a very superior quality. Proof positive of this is the purchase of recent date, by Mr. Ferdinand Schlesinger of Milwaukee, and his associates, of the Dunn $100,000, the Armenia $40,000, the Youngstown $125,000, and the Iron River $250,000. Their

MINING MADE EASY BY A RAND ROCK DRILL.

purchase of the Florence for $350,000 and the Chapin for $2,000,000, I have already noted. Next year the Lincoln, Hope, Lee Peck and Inter Range will be added to the list of Crystal Fall shippers, whilst out of the newly developing explorations, such as the Glidden, Gibson, Lottie, Monongahela, Wagner, Bohemia, May, Parks and Tobin, Atlas, Chicagon, Lake and Gt. Eastern, some, it is confidently expected will have purchasable stock-piles. Whilst the Dunn is the greatest shipper in the district, the Mansfield explored by Mr. W. S. Calhoun, shows the richest product, analyses of samples yielding 65 per cent. metallic iron to .019 per cent. phosphorous. In addition to its mines of hematite, an outcrop deposit of Manganese, was recently discovered by Capt. C. T. Roberts, near the Mastodon, and from analyses of samples from a thousand ton stock-pile, gives an average of 40 per cent. manganese. Mr. F. G. Clark has recently

located a similar deposit. As this mineral is worth $15 a ton, the value of these discoveries is of incalculable importance to Crystal Falls.

Eighteen miles from Crystal Falls by highway beyond the beautiful Fortune Lakes, and by rail twenty miles from the junction at Stager is located IRON RIVER, an erstwhile candidate for the county seat and second only in importance to Crystal Falls. It has a thinking population of 1,200, Stambaugh which abuts it having 300 additional thinkers. It was platted in 1881 by D. C. McKinnon who owns the town site, which with Sipchen's addition now covers 100 acres. The real estate and personal property this year—as assessed—of village and township, amounts to $1,027,962. Gennesee street, the principal thoroughfare and lined with numerous stores, is graded for half a mile, Adam street for three-quarters of a mile, and Cuiyaoga street for the same distance, and all equipped with well planked sidewalks. The drinking water is conducted from a spring



THE MANSFIELD MINE.

through ordinary pipes. The fire tanks are supplied from a reservoir fed by the Iron River. The fire department, in charge of Chief Minkler, consists of 30 men, who control seven hydrants and two hose carts, with 1,000 feet of hose, the pressure being maintained by a Cameron pump. The interests of the village are well conserved by a Board of Trustees, composed as follows: Alex. Quirt, *President;* W. W. Hunter, Andy J. Boyington, C. A. Ecklund, P. Andreson, Gus. Freidrich and John Carson, *Trustees;* Mr. Wright, *Assessor,* with Mr. Frank Ducker, *Clerk.* The Township Board is composed of Mr. St. Peter, *Supervisor;* Thos. H. Flanagan, *Clerk;* Young Campbell, *Justice;* W. H. Fechter, *Treasurer.*

Mr. A. J. Boyington, proprietor of the well known Boyington Hotel, is the same Andy Boyington to whom I introduced you as one of the earliest pioneers at Iron Mountain. He moved to Iron River in 1883, and runs a hotel as famous for its good

qualities as is he himself. Of the other leading citizens, Mr. Quirt, chief of the Trustees, originally connected with the mines since 1882, has from 1888 been extensively engaged in the hardware business. Mr. M. St. Peter, managing partner of Guensburg, St. Peter & Co., has been occupied since 1886 in directing the business of one of the largest dry goods establishments on the range, dividing the clothing trade with the J. M. Quinn Co., whose store is on the opposite side of Gennesee street. Business lots in the village are quoted at $200 up to $450 according to location. Outside residence lots, $100 to $150, and cleared acreage from $10 to $15. The newspaper interests are ably represented by the Iron County *Reporter*, published by Mr. P. O'Brien, assisted by Mr. Lee. The *Reporter* has flourished under its present management since 1887, it having been originally established by Mr. E. P. Lott as the *Mining Reporter* in 1884.

* * * * * * * * * * *

With these many galleys of antique primer, in which I hope I have not over wearied you, with a recital of some synonymously asserted facts—relieved, you will admit, by etching and half tone, good ink, capital "composition," and excellent press work—I leave you to your business reflections. That if not to-day, or tomorrow, "some other day" you will be tempted to scan with your closest commercial scrutiny, the extraordinary trade facts relative to the marvellous Iron Range of the Menominee, of which I have been permitted to handle the scalpel of divulgement—I have not the slightest doubt. The Menominee is a mesmerist. It has extended a trade invitation. The impulse—unknown to yourself—already implanted in your mind to test the measure of the story of its resources, will grow upon you, until the desire to investigate becomes an all engrossing one, as it indeed *must*.

Come then with scrip, or pick, or neither, so you have willing hands and a stout heart, and hasten to exact your share of legitimate "royalty" from

* * * "A land whose stones are iron,
And out of whose hills thou mayest dig brass."

"The Chimes of the Menominee."

A REPRESENTATIVE TRIO.

TABLES

Showing the Output, etc., of the Mines of the Iron Mountain District, and of the Crystal Falls and Iron River Districts, for the year 1890, and the total shipments up to date:

IRON MOUNTAIN DISTRICT.

Name.	Owners.	Superintend'nt.	First Shipment.	Class of Ore.	Iron.	Phos.	Product 1890	Total Output
Calumet	Abandoned 1884		1882					38,713
Chapin	Chapin Mining Co (M. A. Hanna, Prest.)	Vacant	1880	Soft Hematite			742,843	3,218,543
Cornell	Abandoned 1887		1886					6,630
Hamilton	Hamilton Ore Co. (Norman Hall, Prest.)	Jno. T. Jones	1886	do None in mark't			17,072	35,642
Half and Half	do		1889				1,496	6,457
Hersel			1890				955	955
Indiana	Abandoned 1886		1882					17,871
Keel Ridge	Abandoned 1883		1880					58,965
Ludington	Lumbermens Mining Co. (A. A. Carpenter, Prest.)	R. Bankes	1880	Some Bess'mer	60 to 68 %	.065	97,355	843,975
*Millie	D. S. Dessau	Chas. McGregor	1881				39,232	103,234
Pewabic	Pewabic Co	E. F. Brown	1890	High grade Bessemer.	66 %	.040	26,991	26,991
Quinnesec	Abandoned 1889		1878					283,323
*Walpole			1887				2,940	15,104
Metropolitan	Abandoned 1888		1882					107,027
Northwestern	Abandoned 1884		1883					17,205
						Total Tons		4,780,775

* No information tendered.

CRYSTAL FALLS AND IRON RIVER DISTRICTS.

Name.	Owner.	Superintendent.	First Shipment.	Product, 1890.	Total Output.
*Armenia	F. Schlesinger Syndicate	E. Florada	1889	26,649	76,924
Crystal Falls		O. Reibel	1882	3,974	5,315
Dunn	F. Schlesinger Syndicate	F. Cole	1887	156,963	451,559
Great Western	J. M. Turner, Pres	W. Hooper	1882	72,546	222,488
Hollister	J. H. Parkes, *et. al.*		1890	2,020	2,020
Lincoln	Lincoln Iron Co	J. B. Schwartz	1882		8,500
Mansfield	Caledonia Iron Co	Jno. Ericson	1890	18,303	18,303
Manganate			1890	6,844	6,844
Mastodon	C. T. Roberts, Agent	H. Roberts	1882	66,526	323,910
*South Mastodon		E. Blake	1888	1,476	8,203
Monitor	W. S. Coffman	J. F. Clapp	1889	31,139	43,487
Paint River	M. La Monte	F. Scadden	1882	62,654	62,654
Shafer	Shafer & Shelden		1882	60,133	126,169
*Youngstown	Florence Iron Co.		1882	44,460	147,046
Iron River	F. Schlesinger Syndicate	O. Reibel	1882	155,458	844,066
Nanaimo	McKibbon Bros	E. H. Jones	1882	3,441	114,360
Shelden	Shelden Co		1886	not operating	2,092
Sheridan	P. Sheridan		1889	595	1,697

*Not operating 1891.

The Crystal Falls Mine was idle from 1883 to 1889.

The product of the Dunn, Great Western, Mastodon, Paint River, Shafer, Mansfield and Hemlock, which for the period ending September, 1891, reached 406,000 tons, exceeded the shipments of all of the mines last year for the corresponding period by 85,000 tons, which should make the gross total product of all mines in the district for 1891 in excess of that for 1890. The Hemlock is a new shipper.

Detailed description of any of these mines is an impossibility, not a single answer having been received to my applications for information.

The Lincoln Mine (the old Fairbank) is now being re-developed and expects to renew its shipments next season.

TOWN OF CRYSTAL FALLS, MICH.

Facts and pointers worth considering:

IT IS A FACT—That Crystal Falls is the centre of the healthiest locality in the Upper Peninsula. Ague, Hay Fever and kindred ***diseases are unknown.***

IT IS A FACT—That while Crystal Falls is but eleven years old, it boasts of a ***High School, three Church Edifices, two Newspapers, two first-class Hotels, two Banks, Water-works*** supplying water for all purposes, and a ***Public Electric Light Plant,*** supplying streets, stores and private residences. Both of these are owned and operated by the village, which possesses everything desirable to make it a centre of comfortable homes.

IT IS A FACT—That it owns on the Paint River alone one of the ***greatest*** Water-powers in Michigan, sufficient to drive all the necessary or possible machinery in the entire district.

IT IS A FACT—That within its limits every requisite necessary to make a ***Blast Furnace*** a success, exists, such as Water-power and an unbounded supply of hardwood for charcoal, etc.

IT IS A FACT—That sooner or later the shrewd manufacturer will realize that this is the place for a ***Hardwood Factory.*** Birch, Birdseye and other maple, and many varieties of beautiful wood, suitable for bench or lathe, grow in abundance, and in near proximity.

IT IS A FACT—That there is room not only for one but for two ***Saw Mills,*** that will find in the surrounding mines a ready market for their product.

IT IS A FACT—That almost in the city limits, but few rods from the railway, is a ***Mountain of beautiful bluish gray Granite*** susceptible to the finest polish.

IT IS A FACT—That the cultivation of ***Strawberries*** and ***Cereals*** in this vicinity is an assured success.

IT IS A FACT—That good land for agricultural purposes can be bought for $5 an acre.

IT IS A FACT—That its ***Mineral Spring*** is better than the celebrated ***Bethesda Spring*** of Waukesha.

IT IS A FACT—That Crystal Falls needs nothing but to be known, in order to become one of the ***greatest*** cities in Upper Michigan, which it assuredly is destined to be.

J. E. BOWER,
C. ABERLE,
JOHN FISHER,
CHARLES S. HENRY,
WM. RUSSELL,
C. S. CAMPBELL,
Board of Trustees.

JEROME B. SCHWARTZ, *Village President.*
JAMES WILKINSON, *Village Clerk.*
A. LUSTFIELD, *Village Treasurer.*
HUGH McLAREN, *Marshal.*
P. E. DUNN, O. M. BROWN, *Assessors.*
DAVID KITTO, *Chief of Fire Dept.*

CRYSTAL FALLS BUSINESS DIRECTORY.

CLASSIFIED LIST OF ADVERTISERS.

Abstracts of Title—
ROGERS & MACCLINTOCK.

Attorney—
FLEWELLING, A. L.

Bank—
BANK OF CRYSTAL FALLS,
O. D. Kinney, Cashier.

Cigar Manufacturer—
KIRBEY, CHAS. R.

Contractor and Builder—
KITTO, D. A.

Civil Engineer—
CLARKE, F. G.

Druggists—
CAMPBELL & SON,

Dry Goods—
"THE FAIR,"
A. Lustfield, Prop.

Groceries and Meats—
FISHER, JOHN.

Hotel—
THE LOCKWOOD,
Sax & Brazee.

Iron, Steel and Nails—
BURDER & CO.

Livery—
HOLLISTER & CO.

Lumber—
CRYSTAL FALLS LUM. CO.
Harte & Gilman.

Mineral Water—
LARSON, P.

Mining Expert—
SCHWARTZ, J. B.

Newspapers—
THE "CLIPPER."
THE "DIAMOND DRILL."

Opera House—
W. DOUCET.

Photographer—
JAS. MCCOURT.

Real Estate—
GLENDALE ADDITION,
Harte, Flewelling and Eisman.
ROGERS & MACCLINTOCK.
SCHWARTZ, J. B.

J. B. SCHWARTZ,

CRYSTAL FALLS, MICH.

Mining Expert AND Dealer in Real Estate

OWNER OF THE

SCHWARTZ ADDITION TO THE VILLAGE OF CRYSTAL FALLS.

LOTS SOLD ON EASY PAYMENTS.

MINING OPTIONS ON ANY MINERAL LANDS IN THE MENOMINEE RANGE PROCURED.

CORRECT REPORTS AND ESTIMATES
ON MINERAL LANDS FURNISHED.

TAXES FOR NON RESIDENTS PAID. MINING STOCK BOUGHT AND SOLD.

REFERENCES FURNISHED ON APPLICATION.

"THE FAIR."

A. LUSTFIELD, Prop.,

MAMMOTH

Dry Goods and Clothing Emporium

HEADQUARTERS FOR

CARPETS, CLOAKS, HATS, SHOES, TRUNKS AND EVERYTHING ELSE CARRIED IN A STRICTLY FIRST CLASS STORE.

THE OLDEST AND LARGEST ESTABLISHMENT IN CRYSTAL FALLS, MICHIGAN.

A. L. FLEWELLING,

ATTORNEY-AT-LAW,

DUNN BLOCK, CRYSTAL FALLS.

JAS. McCOURT,

PHOTOGRAPHER

PORTRAITS TAKEN BY IMPROVED PROCESS.

VIEWS A SPECIALTY.

A large collection of views of Mines and points of interest in the Menominee Range always on hand. A number of the scenes in this book are reproductions from Mr. McCourt's photographs.

ORDERS BY MAIL RECEIVE ATTENTION.

STUDIO, SUPERIOR STREET.

The only Democratic Paper in the County of Iron.

The Official Paper of the Village of Crystal Falls.

The Crystal Falls Clipper,

H. F. ANDERSEN, EDITOR AND PROP'R.

(Successor to THE CLIPPER PUBLISHING CO.)

CRYSTAL FALLS, - - MICHIGAN.

Advertising Rates on Application.

Excellent Job Work Executed.

THE LOCKWOOD,

SAX & BRAZEE, PROP'RS.

CRYSTAL FALLS, MICH.

☞ Special Attention to Hunting and Fishing Parties.

Joseph Sellwood, President. J. H. Parks, Vice-Pres. O. D. Kinney, Cashier.

THE

Bank of Crystal Falls

CRYSTAL FALLS, MICH.,

Transacts a General Banking Business, Sells Foreign and Domestic Exchange. Agents for the leading Steamship Lines and Fire Insurance Companies. Collections made at Lowest Rates.

CORRESPONDENTS:—Chase National Bank of New York; Continental National Bank of Chicago; Plankinton Bank of Milwaukee.

ABSTRACTS OF TITLE

TO ALL LANDS IN IRON COUNTY.

MAPS AND DIAGRAMS PREPARED.
REAL ESTATE TRANSFERRED
TAXES PAID FOR NON-RESIDENTS.
CORRESPONDENCE SOLICITED.

ROGERS & McCLINTOCK,

CRYSTAL FALLS, - MICHIGAN.

SPECIAL ATTENTION GIVEN TO THE TRANSPORTATION OF HUNTING AND CAMPING PARTIES,

HOLLISTER & CO.,

LIVERY,

SUPERIOR AVE., CRYSTAL FALLS, MICH.

'BUS TO AND FROM ALL TRAINS. RUN IN CONNECTION WITH THE LOCKWOOD HOUSE.

JOHN FISHER,

— DEALER IN —

Beef, Veal, **GROCERIES** Mutton, Pork,

SALT AND SMOKED MEATS OF ALL KINDS, FRUITS, GENERAL PRODUCE, GAME AND FISH IN SEASON, CANNED GOODS, FLOUR, FEED, HAY, ETC.

SUPERIOR STREET, - - - - - - CRYSTAL FALLS.

IRON RIVER BUSINESS DIRECTORY.

CLASSIFIED LIST OF ADVERTISERS.

MENOMINEE IRON RANGE.

Facts worth knowing concerning the Iron Ore industries in the United States, with special reference to the production in the States of Michigan and Wisconsin.—Compiled from reliable official sources:

In 1889 there were 592 producing mines, which reported to the Bureau of Statistics in the United States. Of these 73 were in Michigan and 16 in Wisconsin.

These 592 mines produced 14,518,041 long tons of ore.

The average value of this was $2.30 per ton.

The total value of production was $33,351,978.

Michigan's proportion of this value was $15,800,521, being an average of $2.70 per ton.

Her total production was 5,856,169 tons.

Wisconsin's share of value was $1,840,908, being an average of $2.20 per ton, on a total production of 837,399 tons.

Pennsylvania with 198 mines only produced 1,560,234 tons.

The production of varieties of iron ore in the states of Michigan and Wisconsin respectively, was as follows:

Brown Hematite—Michigan.....	332,257	Brown Hematite—Wisconsin.....	101,970
Red " " 5,272,915		Red " "	735,429

The *consumption* of iron ore in the United States in 1889 exceeded the domestic *production* by 1,505,573 tons!

The average percentage of iron in all the ores smelted in 1889 was 51.27 per cent,

The *average* yield of all metal in Lake Superior ores was 60 per cent!

In Alabama the yield was 46 per cent.; in Tennessee 39 per cent.; in Virginia 43 per cent.

The increase in output of Michigan in 1889 over 1880 was 256.91 per cent., of Wisconsin 2,163.24 per cent.

Connecticut, Maine, Massachusetts, Delaware, Maryland, Missouri, New Jersey, Ohio, Pennsylvania and Vermont *decreased* in output during the corresponding period from 4 to 76 per cent.

As producers of iron ores, Michigan and Wisconsin have ranked in the five census years, as follows:

1850, Wisconsin.....16,	Michigan.....18		1880, Michigan.....2,	Wisconsin. 15	
1860, Michigan..... 5,	Wisconsin.....13		1889, MICHIGAN.....1,	WISCONSIN..... 5	
1870, Michigan..... 1,	Wisconsin..... 6				

In 1850 Michigan stood eighteenth out of 21 states, to-day she stands *first* out of 28 states and territories.

In 1880 the total value of the iron mines of Michigan was $17,496,775. In 1889 their value had increased to $41,958,571.

In 1889 Michigan and Wisconsin combined employed 14,764 overseers, miners and laborers, to whom was paid $6,904,517 in wages.

Whilst the yield of the hard ores of Michigan are nearly one-third per cent. greater than those of the Virginias, the average expenditure for wages per ton of ore won is one-twelfth more only; viz., $1.19 per ton in Michigan and $1.09 in the Virginias. The average wages of miners per day in Michigan is $2.23; in the Virginias $1.13.

In 1889 Michigan produced per each employe 452 long tons of ore; Wisconsin 460; the Virginias 209.

Whilst Michigan ore is nearly *one-third* richer than that of the Virginias, it costs *less than one-fourth* more per ton than it does the Virginias to produce it.

From the Port of Escanaba, on Lake Michigan, 3,792,009 long tons of ore were shipped during the seven months of navigation in 1890.

During twelve months of the same year Bilbao in Spain shipped but 4,272,918 tons. Whilst Spain's seaport, therefore, shipped at the rate of but 356,076 tons per month, Michigan's lake-port shipped at the rate of 541,715 tons per month, making Escanaba practically the greatest ore port in the world.

During the month of August, 1891, Escanaba shipped over 600,000 tons of Michigan and Wisconsin ore.

Crystal Falls, the remotest mining town from the water of any point on the Menominee Range, is only 80 miles by rail from Escanaba.

In 1889, 40 per cent. of the Marquette Range ores, and 16 per cent. of the Gogebic Range ores, besides the whole of the Menominee Range ores, were shipped from Escanaba, having been carried there on the cars of the Chicago & Northwestern Railway Co., who own and operate the huge Ore Docks at that place.

The combined capacity of these docks is 116,000 tons, and 2,000 tons of Menominee ore have been loaded on an ore boat in 35 minutes!

A study of these facts will demonstrate the advantages that confront the capitalist, should he look to the Menominee for the redemption of his elsewhere losses, or the acquisition of greater profits.

INDEX OF MACHINERY ADVERTISERS, ETC.

New York—RAND DRILL CO. *Chicago, Ill.*—M. C. BULLOCK MFG. CO.; CHICAGO & NORTHWESTERN R'Y CO. *Akron, Ohio*—THE WEBSTER CAMP & LANE CO. *Milwaukee, Wis.*—THE EDW. P. ALLIS CO.; MARR & RICHARDS ENGRAVING CO.; THE R. P. ELMORE CO.; COMMERCIAL BANK; THE SWAIN & TATE CO. *London, Eng.*—PROPRIETORS OF IRON. *Iron Mountain, Mich.*—FIRST NATIONAL BANK.

AMBERG GRANITE CO.

AMBERG, WIS.

QUARRIERS, CUTTERS AND POLISHERS.

CONTRACTORS FOR ALL KINDS OF

GRANITE * WORK.

The Quarries and Works of this Company are the most complete in this country as regards facilities and conveniences for the production, working and handling of Granite, while the beauty of the several varities of stone equals any produced in Scotland or elsewhere. The following quarries are the principal ones owned by this Company:

THE "ABERDEEN" RED.
THE "ARGYLE" GRAY.
THE "MARTINDALE" LIGHT BLUE.
THE "PIKE" DARK BLUE.

BUILDING AND STREET PAVING WORK A SPECIALTY.

Persons intending to build are invited to call and examine our Works and Quarries. Estimates made on Architects' Plans.

General Office 119 La Salle Street, Chicago.

WM. A. ARMSTRONG, President.

E. EDWARDS, Supt., Amberg, Wis.

COMMERCIAL BANK

105 GRAND AVENUE, MILWAUKEE, WIS.

CAPITAL, $250,000.

E. R. PAINE, PRESIDENT. J. G. FLINT, VICE-PRESIDENT. A. B. GEILFUSS, CASHIER.

Transacts a General Banking Business.

Buys and sells Exchange, makes Collections on all accessible points, and loans money on good collaterals or acceptable personal endorsement.

Solicits the accounts of Individuals, Firms, Merchants, Banks and Corporations on most favorable terms, and accords to Depositors and Correspondents every accommodation consistent with sound banking.

ACCOUNTS STRICTLY PRIVATE AND CONFIDENTIAL.

EVERY MAN, WOMAN AND CHILD IS INVITED TO OPEN AN ACCOUNT WITH THIS BANK.

A SAVINGS DEPARTMENT Is connected with this Bank and INTEREST ALLOWED ON DEPOSITS at 4 per cent. per annum, payable semi-annually. Deposits of ONE DOLLAR or more received.

DIRECTORS:

E. R. PAINE, JOHN G. FLINT, JAMES KNEELAND, A. B. GEILFUSS, H. M. BENJAMIN, H. B. SANDERSON, J. F. PEIRCE.

THE NORTH-WESTERN LINE
C. & N. W. R'Y.

OVER 7,000 MILES

OF THOROUGHLY EQUIPPED RAILWAY IN

ILLINOIS, IOWA, WISCONSIN, NORTHERN MICHIGAN, MINNESOTA, THE DAKOTAS, NEBRASKA AND WYOMING.

FAST VESTIBULED TRAINS

OF

Wagner and Pullman Palace Sleeping Cars,
Free Reclining Chair Cars.
Tourist Sleeping Cars. Superb Dining Cars

NO CHANGE OF CARS

BETWEEN CHICAGO AND

San Francisco,
Portland,
Denver,
St. Paul,
Minneapolis,
Duluth,
Council Bluffs,
Omaha,
Sioux City.

The Tourist's Favorite Line

TO

MADISON, WAUKESHA, NEENAH, MENASHA,
GREEN LAKE, MARQUETTE, LAKE GENEVA, FOX LAKE,
DEVIL'S LAKE, GOGEBIC, LAKE MINNETONKA,

AND THE

Summer Resorts of the West and Northwest.

For Reduced Rate Excursion Tickets, Maps, Time Tables, and General Information, apply to any Ticket Agent in the United States or Canada, or to the General Passenger and Ticket Agent at Chicago.

W. H. NEWMAN, Third Vice-President. *J. M. WHITMAN*, General Manager. *W. A. THRALL*, Gen'l Passenger and Ticket Agent.

JOHN R. WOOD, President.
OLIVER EVANS, Cashier.

JOHN PERKINS, Vice President.
R. SILVERWOOD, Ass't Cashier.

DIRECTORS.

J. A. CROWELL. W. S. LAING. A. F. WRIGHT.

First National Bank,

OF IRON MOUNTAIN, MICHIGAN.

CAPITAL, $50,000.00. SURPLUS AND PROFITS, $15,000.00.

Solicits Accounts, makes Collections, Allows Interest on Deposits.

Discounts Commercial Paper,

Loans Money on Approved Collaterals,

ISSUES DRAFTS AND MONEY ORDERS ON ALL PARTS OF THE KNOWN WORLD,

and in every way, not interfering with its own well-being

and doing, accommodates its patrons.

STEAMSHIP TICKETS.

President.
Cashier.

00.00.

eposits.

N WORLD,

g

Co.,

LLS,

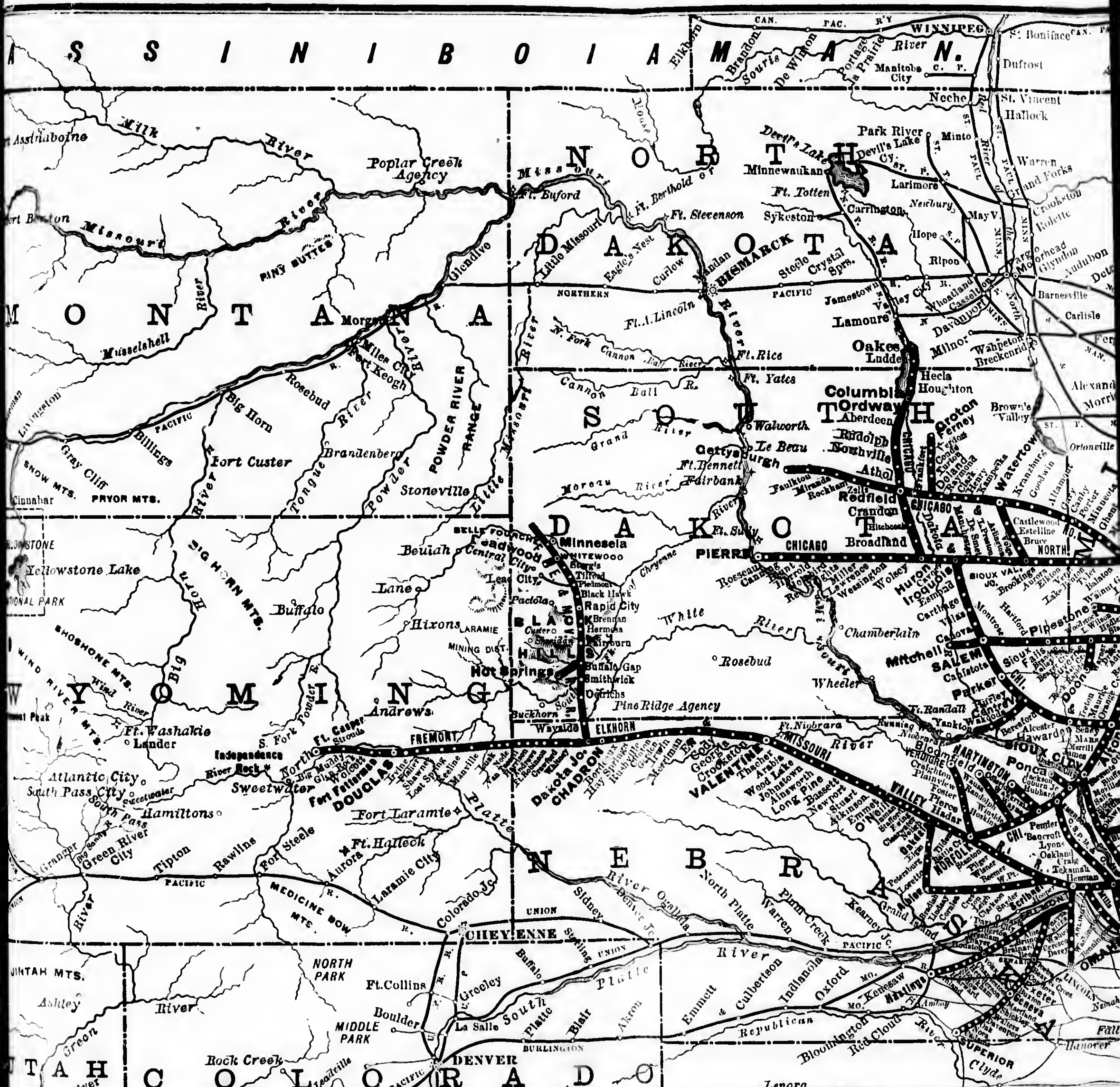
CHINERY.

COMPRESSORS.

AND IMMEDIATE
RS, PLAIN OR
NON-

MADE.

S. A.



A S S I N I B O I A
M A N.
WINNIPEG
CAN. PAC. R'Y
St. Boniface
Dufrost
Brandon
Souris
De Winton
Portage la Prairie
River
Manitoba City
Neche
St. Vincent
Hallock
N O R T H
D A K O T A
Park River
Minto
Devil's Lake
Devil's Lake City
Minnewaukan
Larimore
Ft. Totten
Grand Forks
Crookston
Sykeston
Carrington
May V.
Hope
Ripon
Fargo
Moorhead
Glyndon
Audubon
Barnesville
Carlisle
Ft. Stevenson
Ft. Berthold
Ft. Buford
Poplar Creek Agency
Milk River
Assiniboine
Missouri River
PINY BUTTES
Glendive
Little Missouri
Eagle's Nest
Curlow
Mandan
BISMARCK
Steele
Crystal Sprs.
Jamestown
Valley City
Wheatland
Casselton
NORTHERN PACIFIC
Lamoure
Davenport
Oakes
Ludden
Milnor
Wahpeton
Breckenridge
Hecla
Houghton
Ft. A. Lincoln
Cannon Ball River
Ft. Rice
Ft. Yates
M O N T A N A
Morgan
Musselshell
Miles City
Fort Keogh
Rosebud
Big Horn
Billings
Livingston
Gray Cliff
SNOW MTS.
PRYOR MTS.
Cinnabar
Fort Custer
Brandenberg
Tongue River
Powder River
POWDER RIVER RANGE
Stoneville
Little Missouri River
S O U T H
D A K O T A
Columbia
Ordway
Aberdeen
Groton
Ferney
Rudolph
Northville
Walworth
Le Beau
Gettysburgh
Ft. Bennett
Fairbank
Faulkton
Athol
Redfield
Crandon
Broadland
Watertown
Castlewood
Estelline
Bruce
CHICAGO
PIERRE
Ft. Sully
Huron
Iroquois
Brookings
SIOUX VAL. JC.
Pipestone
Chamberlain
Mitchell
SALEM
Sioux Falls
Parker
Rosebud
Wheeler
Ft. Randall
Yankton
Big Stone
Brown's Valley
Ortonville
Yellowstone Lake
NATIONAL PARK
Minnesela
Deadwood
Central City
Lead City
Sturgis
Rapid City
Hermosa
BLACK HILLS
Hot Springs
Buffalo Gap
Smithwick
Oelrichs
Beulah
Lane
Buffalo
Hixons
LARAMIE MINING DIST.
BIG HORN MTS.
SHOSHONE MTS.
WIND RIVER MTS.
W Y O M I N G
Andrews
Ft. Washakie
Lander
Ft. Casper
S. Fork Powder R.
Independence Rock
Sweetwater
FREMONT
ELKHORN
DOUGLAS
Fort Fetterman
Atlantic City
South Pass City
South Pass
Hamiltons
Fort Laramie
Ft. Halleck
Fort Steele
Rawlins
Tipton
Green River City
Granger
PACIFIC
Aurora
Laramie City
MEDICINE BOW MTS.
Colorado Jc.
CHEYENNE
UNION
Pine Ridge Agency
Buckhorn
Wayside
Dakota Jc.
CHADRON
VALENTINE
Crookston
Cody
Ft. Niobrara
MISSOURI VALLEY
O'Neill
Long Pine
Ainsworth
Johnstown
Wood Lake
Bassett
Newport
Stuart
Atkinson
Emmet
HARTINGTON
Ponca
Bloomfield
Creighton
Plainview
Pierce
Norfolk
N E B R A S K A
Sidney
Ogallala
North Platte
Platte River
Plum Creek
Kearney
Grand Island
Hastings
Kenesaw
Sterling
UNION PACIFIC
North Park
Ft. Collins
Greeley
Boulder
MIDDLE PARK
La Salle
South Platte
Blair
Akron
BURLINGTON
Emmett
Culbertson
Indianola
Oxford
Republican
Bloomington
Red Cloud
SUPERIOR
Clyde
Lenora
UINTAH MTS.
Ashley
Green River
U T A H
C O L O R A D O
Rock Creek
DENVER
Leadville


MAP OF THE
Chicago & North-Western
RAILWAY SYSTEM.
ONTARIO
MINNESOTA
WISCONSIN
MICH.
IOWA
MISSOURI
ILLINOIS
SUPERIOR
Winnipeg
St. Boniface
Red Rock
Ft. Williams
Grand Portage
Red Lake
Duluth
Superior
Bayfield
Washburn
Ashland
Minneapolis
St. Paul
Iron Mountain
Ft. Howard
Green Bay
Eau Claire
Winona
La Crosse
Sioux City
Omaha
Council Bluffs
Des Moines
Clinton
Freeport
Milwaukee
Racine
Chicago
Peoria
Quincy
Lincoln

JOHN R. WOOD, Pr
OLIVER EVANS, Casl

J. A. Cl

Fir

CAPITAL, $5(

Solicits Accou

I

ISSUES DRAFTS ANI

and in ev

∈

ES

N

NG.

NS

Cars.

ne

E,

West.

y to any
icago.

ket Agent.