

THE DIAMOND DRILL.

AMASA, MICHIGAN, SATURDAY, JULY 6, 1901.

A QUIET FOURTH.

People Rested on the Fourth—Many Visited the Falls and Other Towns. The Fourth was an uneventful here held here a couple of weeks took all the energy and money Amasa had to spare and so it was understood that there was to be no "Fourth." There was the usual suspension of work at the mines and a crowd congregated about 11 o'clock and continued throughout the day kept everyone in a number went out of town, Crystal Falls, Quinnesec and other places along the line. The rain which began about 11 o'clock and continued throughout the day kept everyone in a number went out of town, Crystal Falls, Quinnesec and other places along the line. The rain which began about 11 o'clock and continued throughout the day kept everyone in a number went out of town, Crystal Falls, Quinnesec and other places along the line.

There's a Hitch.

Some misunderstanding has arisen between the Amasa fire company and the Crystal Falls company over the hose cart deals. Crystal Falls A. O. U. W. came up here on Amasa's day and was awarded the flag for the greatest proportion of members in the parade. Someone went to Crystal Falls and reported that the township had decided not to give the flag account of the small number in the parade and that they were no badges, but caused a report to be circulated here that the Crystal Falls people could not loan the hose cart for practice. The difficulty will undoubtedly be straightened out.

LOCAL AND PERSONAL.

Frank Steddele and family spent their Fourth at Florence. Chas. Hughes and family and Capt. Bowling spent the Fourth at Quinnesec. Chas. Widberg and Vanda Swanson were among the Amasa people that went the Fourth at Norway. A cow belonging to John Manox was used by fireworks on the Fourth. Mrs. Gibson has been at Marquette on the U. S. jury. John Lundgren was at Stambaugh several days this week.

Dr. and Mrs. Wm. McBurney and Mrs. Morey and daughter Mabel went to Crystal Falls last Saturday evening to attend the production of "Faust". All enjoyed it immensely.

The Contract System.

(continued from mining page.) Holes to be drilled is marked, and their approximate depth and direction are indicated by the foreman. Misplaced holes or those that are drilled too deep, are not accepted by the foreman as entitled to be paid for; and on occasional check of this kind all that is necessary to insure good work. Drilling proceeds without interruption during working hours, and is only stopped on the night-shift in time to allow the contractors to take down the machines, clean out the holes, and leave them in shape for the blasting crew, before leaving the working faces at 1 a. m. The number of feet of holes drilled is measured at the end of the shift, at which time a record of the measurement is furnished to the contractors, and a duplicate is delivered at the office. The blasting crew works between the hours of 1 a. m. and 7 a. m., and its work consists in loading and blasting the holes drilled by the miners. This effects a considerable saving in the consumption of explosives, since these are handled by a few picked men only. Another advantage of this method is that it involves no loss of time by miners and muckers (shovelers) in waiting for the working faces to become clear of smoke. In headings, the details of the work are, in all essentials, the same as previously explained with respect to the stopes. The number, direction and depth of the holes are outlined by the foreman or shift boss, but when contractors have become familiar with the ground, little direction of this kind is needed, the work being practically the same each day. The working hours are the same as in stopes. On entering the heading in the morning the

miners pick down the roof, put up the horizontal bar supporting the machine-drill, and proceed with the drilling of the holes in the upper part of the face. While drilling is carried on the shovelers are removing the broken rock from the previous blast. By the time this has been cleared away the machine-men are ready to take down the bar, set it again in a horizontal position near the floor of the drift and drill bottom-holes or "lifters." These being finished, the machine is taken down; the holes are cleaned out, and a floor is laid for the shovelers. Everything is then ready for the blasting, which, as in other parts of the mine, is performed between 1 and 7 a. m. by a special crew. In headings where a certain number of holes have to be drilled before the whole set or "round" can be blasted, the difficulty with the hole system (i. e., the system of payment according to linear feet of aggregate drilling) is in making sure that the contractors finish this work before blasting time, in order that they may not have to lose working time during the blasting, and thus that they may be kept continuously employed. This difficulty is met, either (a) by increasing or decreasing the depth of the holes to be drilled; or (b) by having one or two spare headings or stoping breasts in which contractors can utilize their extra time. The latter expedient is to be preferred, for the reason that to secure the best effect the depth of drill holes ought to be determined on other grounds than that of the time required to drill them.

ADVANTAGES OF THE HOLE SYSTEM. 1. Its applicability in stoping, where the ore shoots are irregular in outline, and measurement by weight or volume of the ore broken cannot be easily made. 2. Within certain limits the number of machines in any one stope can be varied at will; and there is no difficulty such as would arise from the necessity of keeping separate the work done by each set of contractors. 3. The system is extremely elastic; that is, the same set of contractors can be employed in different headings or stopes without any resultant confusion in measuring the work performed. 4. Blasting is done only in the interval between 1 a. m. and 7 a. m., and the miners and shovelers are not kept idle, waiting for the smoke and gas to be cleared away from the working faces.

DISADVANTAGES OF THE HOLE SYSTEM. As above shown, this system has been perfectly satisfactory in stopes. In headings, the disadvantages, as compared with the linear system of payment per running foot, are as follows: 1. Two 8-hour shifts only are employed under the hole system; while by the system of paying according to the linear progress of the heading, three shifts may be employed daily, and blasting done at any time, thus often increasing the rate of advance, which may be a matter of supreme importance in opening new ground, etc. 2. The difficulty, already discussed, of so laying out the work that the round of holes may be completed in the two daily shifts, without an undue loss of time to the contractors.

ECONOMIC RESULTS OF THE CONTRACT SYSTEM. The following tables show the saving effected by the substitution of the contract for the wage system. In this connection I may add that the advantage thus gained by the employer is not less to the workmen. The miner now receives daily from \$4 to \$4.25, as against \$3.50 under the wage system.

Table I.—Comparative Cost of Stopping. Contract (Hole) System Per ton. Wage System Per ton. Drilling.....\$0.250 80,750 Blasting.....0.021 0,115 Explosives.....0.100 80,865 Total.....\$0.477 80,865 Table II.—Comparative Cost of Development Work. Contract (Hole) System Per foot. Wage System Per foot. Drilling.....\$5.36 88.36 Blasting.....0.68 2.88 Explosives.....2.75 2.88 Total.....\$8.79 \$11.14

*Calculated from 49,849 tons of ore stoped. †Calculated from 13,818 tons of ore mined. ‡Calculated from 1,244 feet of headings driven. §Calculated from 1,377.5 feet of headings driven. Equally important with the saving per foot or ton shown in Tables I. and II. is the increased speed with which shafts have been sunk, and the headings have been driven. For it is clear that, other condition remaining the same, the output of the mines is governed by the time required to open new ground in depth by sinking and driving level, etc. In drifting and cross-cutting the average rate of advance per month has been increased from 59.8 ft. under the contract system; this comparison being made on the basis of 2 shifts (4 men) per day, and a 30-day month. In shaft sinking, calculating on a basis of 3 shifts (12 men) per day and a 30-day month, 555 ft. of work done under the contract system, compared with the last 200ft. done under the wage system, show the rate of advance per month to have been increased from 27.2 ft. to the present average of 58 ft.

White Man Turned Yellow. Great consternation was felt by the friends of M. A. Hogarty, of Lexington, Ky., when they saw he was turning yellow. His skin slowly changed color, also his eyes, and he suffered terribly. His malady was Yellow Jaundice. He was treated by the best doctors, but without benefit. Then he was advised to try Electric Bitters, the wonderful Stomach and Liver Remedy, and he writes: "After taking two bottles I was wholly cured." A trial proves its matchless merit for all Stomach, Liver and Kidney troubles. Only 50c. Sold by J. C. Wilkinson, druggist.

Very Low Rates Excursion Tickets to the Pan-American Exposition, Buffalo, N. Y. Via the North-Western Line are sold daily with favorable return limits. Direct connection at Chicago, with fast trains of all lines to Buffalo. For further particulars, apply to agents. An illustrated booklet will be mailed on receipt of two cents postage by W. E. Kniskern, General Passenger and Ticket Agent, Chicago.

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C. M. & St. Paul Railway. Going north to all points in the iron and copper country. 7:15 a. m. Going south to Milwaukee and Chicago and all points south. 9:40 p. m. Going north to all points in iron and copper country. 2:15 p. m. Going south to Milwaukee and Chicago and all points south. 7:25 p. m. Through sleeping cars to Milwaukee and Chicago.

If young ladies think sores, pimples and red noses look well with a bridal veil and orange blossoms, it's all right. Yet Rocky Mountain Tea would drive them away. 35c. J. C. Wilkinson.

Copper Range Railroad Co.

TIME TABLE. In effect at 12:01 Saturday, November 3, 1900.

No. 1	No. 2	No. 3	No. 4
North	South	North	South
Pass.	Pass.	Pass.	Pass.
41.6	42.30	43.15	44.00
44.6	45.30	46.15	47.00
48.6	49.30	50.15	51.00
51.6	52.30	53.15	54.00
55.6	56.30	57.15	58.00
58.6	59.30	60.15	61.00
61.6	62.30	63.15	64.00
64.6	65.30	66.15	67.00
67.6	68.30	69.15	70.00
70.6	71.30	72.15	73.00
73.6	74.30	75.15	76.00
76.6	77.30	78.15	79.00
79.6	80.30	81.15	82.00
82.6	83.30	84.15	85.00
85.6	86.30	87.15	88.00
88.6	89.30	90.15	91.00
91.6	92.30	93.15	94.00
94.6	95.30	96.15	97.00
97.6	98.30	99.15	100.00

Short Line to Copper Country. Trains make close connection to and from Calumet, Lake Linden, Dollar Bay and other points on Mineral Range and H. & C. Rys. For information in regard to rates, etc., apply to nearest agent or to this office. W. J. SOUDER, G. P. A. Houghton, Mich.

CHICAGO, MILWAUKEE & ST. PAUL. Going north.....9:25 a. m. Going south.....5:45 p. m. CHICAGO & NORTH-WESTERN. Arrive.— From Crystal Falls.....6:45 a. m. From Chicago.....4:15 p. m. Leave.— For Crystal Falls and points north and south.....7:45 a. m. For Crystal Falls and Chicago.....5:05 p. m.

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GROSBY LINE STEAMERS. MILWAUKEE, GRAND HAVEN AND MUSKOGON LINE. Steamers leave Milwaukee daily 9:15 p. m., arriving at Grand Haven 5 a. m. and Muskegon at 7:30 a. m.

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TIME TABLE. In effect May 5th, 1901. Trains Leave Champion. For Montreal, the east and lower Michigan.....*3:37 a. m. For Houghton and the copper country.....*9:45 a. m. For Ironwood, Hurley, Ashland and Duluth.....*9:55 a. m. For Detroit and the east.....*11:35 a. m. For Houghton, Calumet, Duluth and the west.....*12:00 a. m. Trains leave Republic. For Houghton and the copper country.....*3:50 p. m. For Marquette.....*9:10 a. m. For Detroit and the east.....*9:10 a. m. For Negaunee, Ishpeming and Marquette.....*3:50 p. m. For tickets, time tables and other information, apply to A. H. Fink, Ticket Agt., Champion, Mich. C. E. HAGGREN, Ticket Agt., Republic, Mich.