For the Journal of the Franklin Institute.

Particulars of the Steamer Charles Morgan.

New York.—Hull built by Westervelt & Son. Machinery by Morgan Iron Works. Owners, Harris & Morgan. Intended service, Gulf of Mexico.

HULL.—

Length on deck,	215 feet.
Breadth of beam at midship section,	34 "
Depths of hold,	10 & 17 "
Length of engine and boiler space,	74 "
Draught of water at load line,	9 "
" " " below pressure and revolutions,	7 "
Floor timbers at throats, moulded,	14 inches.
Do. do., sided,	14 "
Distance of frames apart at centres,	28 "
Capacity of coal bunkers, in tons of coal,	200
Masts and rig,	Foretopsail schooner.

ENGINE.—One—vertical beam.

Diameter of cylinder,	5 feet.
Length of stroke,	11 "
Maximum pressure of steam in pounds,	20
" revolutions per minute,	20

BOILERS.—Two—single return flued.

Length of boilers,	29 feet.
Breadth " " "	10 " 9 inches.
Height " exclusive of steam chimney,	11 " 3 "
Number of furnaces,	6
Length of grate bars,	7 "
Diameter of smoke pipe,	6 " 3 "
Height of smoke pipe,	42 "
Number of flues,	16
Internal diameter of flues,	17½, 17, 16, and 12 "
Heating surface in sq. feet.	5000
Description of coal,	Bituminous.

WATER WHEELS.—

Diameter,	31 feet 3 inches.
Length of blades,	8 "
Depth " "	1 " 8 "
Number of blades,	26

Remarks.—Hull strapped with iron braces, $4 \times \frac{5}{8}$ inch.

For the Journal of the Franklin Institute.

The Mineral Contents of the Lower Sandstone of the Upper Mississippi.
Condensed from Dr. Owen's Geol. Survey of Wisconsin, &c. By Dr.
L. TURNBULL.

According to Dr. Owen's experience in other mining districts, the country over which this light colored quartz ore sandstone prevails, is not likely to be very productive in mineral deposits; yet between the Mississippi and Kickapoo Rivers, on the southeast quarter of Section 27, Township 10, North, Range 5, West, of the 4th Principal Meridian, copper ore has been discovered, not, however, in immediate connexion with the sandstone. The wall-rock to which the ore was traced, and which bounds it on the south-east, is a magnesian limestone, possessing

all the characters usual in the lead and copper localities of the rich Mineral Point district.

This copper ore has a light green color, waxy lustre and fracture, and very brittle, disseminated through ferruginous earthy matter, composed chiefly of brown oxide of iron. The following is the analysis by Dr. Owen, of this ore, in the usual way, gave from a gramme:—

Water,		11.2
Carbonic acid,		05.0
Insoluble silicates, traces of oxide of iron,		08.3
Protoxide of copper,		25.0
Peroxide of iron,		48.7
Protoxide of manganese,		00.2
Alumina,		00.6
Carbonate of lime,		00.8
Loss,		00.2
		<hr/>
		100.0

= 19.87 per cent. by calculation, of metallic copper.

Smelted by Wm. Preston, at Mineral Point, it yielded 23 per cent. of metallic copper, being only three per cent. more than the result of Dr. Owen's analysis.

This ore was first discovered by a Mr. Sterling, in March, 1843, on the north slope of a hill, the foot of which is watered by Cooper creek, a small tributary which runs west, into the Mississippi, four and a half miles from the Kickapoo. It was explored by Mr. Sterling, and proved to be a bed from 12 to 15 feet wide, and five to seven deep, spreading out as it descended the slope, to 30 feet wide, and conformable to the outline of the hill. On tracing it to the south, it was followed to near the brow of the hill, where it pitches to the southeast, parallel with a wall of magnesian limestone, and almost perpendicularly. The wall of magnesian limestone is quite solid, and without apparent stratification. A shaft of 50 feet was first sunk from the surface; then a drift of 90 feet was run on the west side of the perpendicular wall of rock; and afterwards another shaft of 12 feet at the end of the drift. To the north, a gallery was run 40 feet, and six feet sunk perpendicularly; the copper ore extending both horizontally and vertically, as far as these excavations were carried.

The mine lies well for drainage, and the ore is of a kind easily reduced in the furnace, and yields so good a percentage of copper (about 20 to 23 per cent.) that it would be well worth the expense to prove this mine further than has yet been done, so as to determine to what extent the ore traverses the magnesian limestone before entering the sandstone, in which latter formation the vein would probably dwindle, or entirely disappear. Mr. Sterling has transported 24,000 lbs. of the ore to Mineral Point, and had it smelted, with the results as given above.

Carson & Sterling, of Mineral Point, subsequently discovered copper ore of a similar quality on the same quarter section, only 300 yards north of the ore bed just described.

On Section 1, Township 12, and Range 4, east of the 4th Principal Meridian, copper ore has been found, in the vicinity of the Barraboo River, disseminated in pockets through brown ferruginous beds of sandstone,

occurring towards the base of F 1. It is a green carbonate and silicate of copper, similar in character to that occurring near Mineral Point.—*Owen's Geol. Survey.*

Copper Ore in the Lower Magnesium Limestone.—Between Plum and Pine Creek, in the south west corner of Section 26, Township 8, North, Range 5 West, of the 4th Principal Meridian, on the south east slope of a hill, copper ore, associated with hematite, was found, and traced into a crevice traversing the lower cherty beds of the formation; also four, miles beyond, in a N. N. W. direction, on the slope of another hill, copper ore was picked up, and yielded, by analysis, from 17 to 23 per cent. of copper.

To be Continued.

For the Journal of the Franklin Institute.

Particulars of the Steamer Sonora.

New York.—Hull built by Westervelt & Son. Machinery by Morgan Iron Works. Owners, Pacific Mail Steamship Company. Intended service, Pacific.

HULL.—

Length on deck,	264 feet.
Breadth of beam at midship section,	36 "
Depths of hold,	17 feet 3 in. and 24 " 6 inches.
Length of engine and boiler space,	66 "
Draft of water at load line,	12 "
Draft of water at below pressure and revolutions,	7 "
Floor timbers at throats, moulded,	16 inches.
" " sided,	14 "
Distance of frames apart at centres,	28 "
Masts and rig,	Foretopsail Schooner.

ENGINES.—Two—Vertical beam.

Diameter of cylinders,	50 inches
Length of stroke,	10 feet.
Maximum pressure of steam in pounds,	20
Maximum revolutions per minute,	20

BOILER.—Two—single return flued.

Length of boilers,	30 feet.
Breadth " "	13 "
Height " exclusive of steam chimney,	12 "
Number of furnaces,	6
Length of grate bars,	7 "
Number of flues,	28
Internal diameter of flues,	16, 15, 13, and 10 inches.
Diameter of smoke pipe,	6 feet 9 "
Height of smoke pipe,	42 "
Description of coal,	Bituminous.

WATER WHEELS.

Diameter of water wheel,	30 feet.
Length of blades,	9 "
Depth " "	16 inches.
Number " "	26

Remarks.—Guards fore and aft; hull strapped with iron braces, 4 × $\frac{5}{8}$ inches.