PROGRESS OF RAILROADS IN THE UNITED STATES.

The following is a statement of the number of miles of railroad in operation in each year since 1831:—

STATEMENT OF TOTAL MILEAGE FOR THIRTY YEARS.

1831..... 54	1841.....3,319	1851..... 8,856
1832..... 134	1842..... 3,877	1852.....10,878
1833..... 576	1843.....4,174	1853.....13,315
1834..... 762	1844.....4,311	1854.....15,511
1835..... 918	1845.....4,552	1855.....18,153
1836.....1,102	1846.....4,870	1856.....21,440
1837.....1,421	1847.....5,336	1857.....24,290
1838.....1,843	1848.....5,682	1858.....26,210
1839.....1,920	1849.....6,350	1859.....27,857
1840.....2,197	1850.....7,475	1860.....29,401

DECENNIAL INCREASE.

1840.....	2,197		
1850.....	7,475	5,278 or	240.2 per cent.
1860.....	29,401	21,922	293.5 "

The total number of miles in operation on the 1st day of January, 1859, was 27,857. The number of miles opened during the year, consequently has been 1,541.

The number of miles in progress in the United States is estimated at 17,580. The extent of mileage of roads in progress can never be stated with much accuracy, but we see no limit to the construction of these works, till they become the common highways for every portion of the country. In the northeastern and in some of the western States, this result seems pretty nearly accomplished; yet, even in those, the system is constantly expanding. Their construction, under a state of affairs similar to the present, must rapidly continue to go on till an aggregate of 50,000 miles is reached. Even the embarrassments of the country which culminated in 1857, seemed to have exerted only a slight influence in checking their progress, which was never more active than at the present time in several of the States.

The total amount of capital invested in all the roads is $1,118,920,929. The increase during the year has been $157,873,565. Our statement a year ago did not embrace roads in progress. The actual increase may be somewhat over-estimated. Not so with the aggregates, however.

Below is a comparative view of the mileage of railroads in the several States on the 1st of January, 1850, 1855, and 1860:—

	1850. Miles.	1855. Miles.	1860. Miles.
Maine.....	175	409	476
New Hampshire.....	309	585	662
Vermont.....	243	454	561
Massachusetts.....	1,095	1,102	1,391
Rhode Island.....	50	50	101
Connecticut.....	434	571	599
New England States.....	2,306	3,171	3,790
New York.....	1,070	2,623	2,779
New Jersey.....	231	429	557
Pennsylvania.....	981	1,681	2,787
Delaware.....	16	39	127
Maryland.....	324	367	478
Middle Atlantic States...	2,622	5,139	6,728
Virginia.....	303	986	1,756
North Carolina.....	302	349	703
South Carolina.....	241	741	900
Georgia.....	609	975	1,243
Florida.....	54	21	290
South Atlantic States....	1,509	3,072	4,892
Alabama.....	113	304	629
Mississippi.....	60	226	691
Louisiana.....	66	198	294
Texas.....	0	32	285
Gulf States.....	239	760	1,899
Arkansas.....	...	...	39
Missonri.....	...	37	724
Tennessee.....	...	326	977
Kentucky.....	28	231	511
Sonth Interior States.....	28	594	2,251
Ohio.....	299	2,453	3,017
Michigan.....	344	474	797
Indiana.....	86	1,406	2,005
Illinois.....	22	884	2,728
Wisconsin.....	...	200	876
Iowa.....	...	...	395
Minnesota.....	...	...	...
North Interior States.....	751	5,417	9,818
California.....	...	...	23
Oregon.....	...	...	...
Pacific States.....	...	...	23
Total, United States.....	**7,475**	**18,153**	**29,401**

TO CUT ELBOWS OF STOVE PIPES BY RULE AND COMPASS.

At the special request of a subscriber, we re-publish the following article from page 50, Vol. X. (old series) of the SCIENTIFIC AMERICAN.

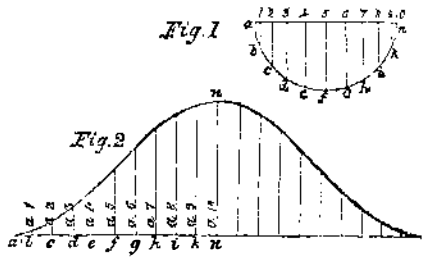

Fig. 1.—Draw a straight line, *a n*, and make it equal to the diameter of the stove-pipe, then draw the semicircle, *a f n*, and divide it (the semicircle) into as many equal parts as may be found convenient, *a b c*, &c. From these parts of division draw perpendicular lines upon the diameter, which will divide the figure into ten unequal parts.

Fig. 2.—Calculate the length of the semicircle, Fig. 1, by the proportion of $1 \times 3{\cdot}14159 \div 2 = a\ b\ c\ d$, &c. Draw a straight line for the base, and make it equal in length to this semicircle, and divide it into as many equal parts as the semicircle was divided—10; and then draw the perpendiculars *a*1—*a*5—*a*10, and make them equal to the lengths of the parts of the diameter of Fig. 1, beginning from *a* to 10. That is, the vertical line, *n n*, *a*10, Fig. 2, is the diameter of Fig. 1; the next vertical line, *a*9, Fig. 2, is the length, *a*9, of the diameter, Fig. 1, and thus draw all these vertical lines on Fig. 2, the last one being *a* 1 which is the short division *a*1, Fig. 1. Join the ordinates in these points by short lines, and we have the diagram for a gutter (one half of Fig. 2), double it, and then we have one for a stove-pipe (all Fig. 2), two of which, when joined, form an elbow of 90°. Fig. 2, it will be observed by tinsmiths, resembles the pattern used for elbows. Care should be exercised that the distance between the abscisses do not exceed half an inch; a quarter will be about correct.

HOW TO BURN COAL.

Nine out of ten who attempt to burn coal in a stove, waste about as much coal as is necessary to be be consumed for the obtaining of all the heat desirable. Observe the following rules: We will suppose the stove cleaned out. First, To make a coal fire: Put in a double handfull of shavings, or light kindling-wood instead. Fill the earthen cavity (if the stove has one) nearly full of chunks of dry wood, say four or six inches in length. On the top put a dozen lumps of egg coal. Light with a paper from beneath. In ten minutes add about twenty lumps more of coal. As soon as the wood has burnt out, fill the cavity half to two-thirds full of coal. The fire will be a good one. The coal will, by following these directions, become thoroughly ignited. Second, Never fill a stove more than half or two-thirds full of coal, even in the coldest weather. Third, When the fire is low, never shake the grate or disturb the ashes, but add from ten to fifteen small lumps of coal, and set the draft open. When these are heated through and somewhat ignited, add the amount necessary for a new fire, but do not disturb the ashes yet. Let the draft be open half an hour. Now shake out the ashes. The coal will be thoroughly ignited, and will keep the stove at high heat from six to twelve hours, according to the coldness of the weather. Fourth, For very cold weather. After the fire is made according to the rules first and third, add every hour about fifteen to twenty lumps of egg coal. You will find that the ashes made each hour will be about in that ratio.

This advice relates to cylinder stoves of medium size, as the amount of coal to be fed in depends on the space in the fire-box.

HOW TO BURN SAWDUST SATISFACTORILY.

MESSRS. EDITORS:—In burning sawdust or any other comminuted fuel which affords no interstitial draft, the proper method is, at the first firing-up, to supply the fire on the extreme one side of the furnace, the next time on the other, and so on alternately. A rigid adherence to this rule, with a little experience, will enable many mill-owners to use sawdust exclusively, who now have to mix in other fuel. I. H. S.

Washington, D. C., Jan. 23, 1860.

A COLUMN OF VARIETIES.

The railroads in actual operation in the United States, if extended in a continuous line, would reach round the earth, and from the Mississippi to England beside. .....Perhaps the largest plate of glass ever produced was one made at the St. Cobain Works, in France. The length of the plate was 5.37 meters (18 feet), and it was was 3.36 meters (11 feet 9 inches) wide, and 12 milometers, or nearly half an inch thick.....A German clock, over two centuries old, has been set in running order by a watchmaker in Hartford. Although it has not run for more than half a century, it is now keeping good time, and may last another two centuries. It was found by the artist Church, in the possession of a Dutch family in Nova Scotia. In that family it had been handed down from father to son for generations. This is one of the very first clocks ever made with a pendulum. The clock strikes for the half hour and hour, and is wound by means of an endless chain. It is an open frame of black, ancient oak, exposing the works, which are of brass, and very nicely finished.....The first printing office in Providence, R. I., was established in 1762, and the first two things printed were a hand-bill containing news, and a play-bill. The latter was for the first theatrical performance ever given in New England. The company was the first that ever appeared in North America. They were brought over by one David Douglas, a Scotchman, who fitted up a small theater in New York and also appeared in one or two other places, before going to New England.....A line drawn level with the surface of the water in the distributing reservoir between Fortieth and Forty-second streets, cuts the clock tower on the City Hall between the top of the pillars and the clock face.....A great exhibition of the industry of all nations is soon to be opened at Amsterdam, in Holland. It is announced that there will be a complete historical exhibition of apparatus for the manufacture of illuminating gas.....Large discoveries of mineral coal have recently been made in the arrondissement of Alais, in France.....One of the cells of the yeast plant, when at its full growth, measures about 325-100,000th of an inch in diameter.....It is positively ascertained that the moon has neither water nor clouds; at all events, on the side which is turned towards the earth.....The large guns cast at Woolwich are allowed each four days to cool.....A mixture of three parts snow and four of potash produces a cold of 57°, or 89° below the freezing point.....A column of the best cast iron would require to be nearly ten miles in hight before its lower portion would yield by crushing.....Sulphuric acid crystals, on being mixed with water in a platina crucible, evolve such a heat as to heat the crucible almost instantly to redness .....Mr. Fairbairn has calculated that the greatest clear span at which an iron tubular bridge would support its own weight would be between 1,800 feet and 2,000 feet. .....The royalty claimed, under Mr. Griffiths' patent, for his improved screw propeller, is £1 per horse-power of the vessel to which the invention is applied.....With well-fitted piston packing-rings a pressure of between 3 lbs. and 4 lbs. per square inch of their bearing surface is sufficient to keep them tight, whatever may be the pressure of steam worked in the cylinder.....It has been found that in very small capillary tubes—say of the 1-200th of an inch in diameter—water may be cooled as low as 5° before freezing. Under the same circumstances water may be heated considerably above 212° before boiling. .....Mr. Joshua Field found that, in a single instance, a strong laborer, exerting his whole strength, was able to raise 27,562 lbs. one foot high per minute; the duration of the effort being 2·2 minutes. This was in addition to the friction of the apparatus employed, and Mr. Field estimated the whole effect as equal to a horse-power of 33,000 lbs. raised one foot per minute. The average power of an ordinary laborer is only 3,300 lbs. raised one foot per minute.....Sulphurous acid, although extremely volatile, will not evaporate in a platina crucible previously heated red-hot. If, however, a few drops of water are thrown in, the mixture is brought into intimate contact with the sides of the vessel, and such is the energy of the evaporation of the acid, and its absorption of all the heat of the water, that the latter will be not only left behind, but perfectly frozen in the red-hot crucible, from which it may be thrown out as a button of ice.....The declared value of British exportations of iron and steel, in 1857, was £13,406,076. In 1858 the declared value was £11,236,045.