other cases, a strong solution of sal ammoniac is used to moisten the edges of the joint. Then the resin is sprinkled upon it, and the solder applied. The chloride of zinc is made by dissolving pieces of zinc in muriatic acid. It is well adapted for soldering zinc plates and pipes, and is applyed with a brush to moisten the edge of the article to be soldered. The solder is then applied in the usual way with a tool. Zinc is a very difficult metal to solder, because it is so easily coated with oxide and it also volatilises with heat.—*Mechanics Magazine.*

CAN WORK BE DONE WITHOUT BEER OR SPIRITUOUS LIQUORS.

A correspondent of the *Mining Journal* says:—Paul Bartlett is employed as a labourer at Tudhall Iron Works, Durham, and has been a teetotaller fourteen years. His employment consists in wheeling iron to the furnaces. He works nine hours per day, and five days per week. He wheels 24 tons of iron each day, 4 cwt. at a time. The distance traversed is nearly nine miles per day. He thus walks 45 miles per week of five days, wheeling in the same time 120 tons of iron. During the fourteen years Paul has driven his barrow, with its 4 cwt. of iron, not less than 630 miles, and has wheeled in the same time 87,360 tons. He can on a "pinch" place a ton weight on his barrow and wheel it several yards.

The G. W. R. R., N. R. R., G. T. Railways and the Grain Trade.

The following will show the comparative amount of produce moved by these three railways during the past and previous years:—

	Flour, Bls.	Grain, Bush.
1862	1,053,951	4,353,616
1861	829,051	4,673,796

Reducing the flour to wheat at the rate of five bushels to the barrel, the entire movement amounts to 9,623, 371 bushels, against 8,816,051 in 1861.

Copper Shoe-tips.

The *Scientific American* says, "The copper shoe-tips, now so estensively used for children's shoes, are manufactured at Lewiston, Maine. Three million pair of tips are turned out annually at the factory."

A large quantity of these articles are imported into Canada. Could they not—with our present protection tariff—be manufactured here at a fair profit?

Zinc Wash for Rooms.

Mix oxide of zinc with common size and apply it with a brush, like lime whitewash to the ceiling of a room. After this apply a wash in the same manner of the chloride of zinc, which will combine with the oxide and form a smooth cement with a shining surface.—*Artizan.*

Pittsburgh and Petroleum.

Not a barrel of petroleum had been landed at Pittsburgh three years ago. Within that space of time two millions of barrels have been delivered on the wharves of that city. The value of this quantity unrefined, amounted to $8,000,000; when refined, $17,000,000; two-thirds of the quantity were refined in Pittsburg and the vicinity. There are 60 oil refineries in that city, in which 600 persons are employed, and which in buildings and apparatus, represent a capital of $1,000,000. In these refineries 1,200,000 bushels of coal are consumed annually. From nothing this petroleum business has arisen in three years to be second only in importance to the iron trade of Pittsburgh, simply because it is the centre of the oil-producing region of the United States and possesses superior facilities for importation, exportation and refining.

Ventilation of Apartments.

The Academy of Sciences, Paris, has received an interesting paper by General Morin, on the ventilation produced in apartments by fire-places. The room of the director of the Conservatoire des Arts et Metiers was chosen by him for his experiments. This room may be heated at pleasure, either by a fire in the fire-place, or by a mouth of the calorifere of the establishment. Experiments were first instituted to ascertain the volume of air evacuated by the fire-place by the mere action of the difference of temperature of the outer and inner atmosphere. This natural ventilation was found to be on an average 400 cubic metres of air per hour, when the outer temperature was between 1·8 and 10 deg. centigrade (35·3 and 1·50 Fahr.), and the inner temperature was between 18 and 22 deg. centigrade (64·4 and 71·6 Fahr). Hence this room is sufficiently ventilated by the mere aspiration of the chimney, even when, instead of one person, it contains, as it sometimes happens, ten or twelve. Direct experiments afterwards showed that the mouth of the calorifere introduced 150 cubic metres of air at 20 deg. centrigrade per hour (68 Fahr.), when the temperature of the calorifere was between 70 and 100 deg. centigrade (158 and 212 Fahr.); but when the temperature of the calorifere was 45 deg., it only furnished 123 cubic metres. The quantity of air thus introduced through the interstices of two windows and two doors was found to be 246 cubic metres per hour. The fire-place drew from 1,200 to 1,300 cubic metres of air per hour, the amount of wood consumed being 8.26 kilogrammes per hour. The same quantity of air was drawn when the fire consisted of coal, the quantity burnt being 4 kilogrammes per hour. From these experiments it appears that nearly the whole of the warmth produced by combustibles in an apartment is carried off through the chimney, and the only useful part of it is obtained by radiation.

The Gold Miner's Implements.

The first miner's implement was a large dish of tin plate, or simply of wood. This dish was filled with earth, and shaken up in water, so that the sand was thrown off, while the heavier gold remained at the bottom of the plate. The miner, with this dish, could wash at the most 400 kilogrammes of earth (about 7½ cwt.) per day. In those times, however, he found the river diggings to yield 400 or 500 francs worth of gold per cubic metre. The gold digger could thus earn 125 to 130 francs per diem. After the dish there came the "*rocker.*" The "rocker" is a small oblong box without a cover, and open at one of the smaller ends. The bottom of the rocker is covered with a