

A NEW SUBSTITUTE FOR ASPHALT.

Germany possesses no quarries of bituminous limestone suitable for street pavements. The chemists of that country have often tried to find an artificial substitute, but never succeeded. The compositions lacked the necessary strength and elasticity, although every possible combination of limestone and bitumen was tried.

Herr Busse, a chemist of Linden, near Hanover, noticed that all artificial asphalts lacked certain gummy oils existing in the natural stone. This led him to experiment on mixtures of finely powdered stone with these oils, with the result of producing a material said to be very similar to natural asphalt.

The material is claimed to be absolutely impervious to the action of the weather. At the government testing bureau at Charlottenburg, the compressive strength was found to be about 2,300 lbs. per sq. inch. In some experiments in Hanover it was found that a layer of the material 2 inches thick would stand a pressure of 5,970 lbs. per sq. inch. The difference between the figure and that just given is probably due to the fact that the government tests were made on centimetre tubes. About 500 sq. yards were laid in Hanover in the summer of 1887; this surface has worn so well that 1,670 sq. yards are now being laid in that city. Berlin, Hamburg and Cologne have begun series of tests also.

The compound is laid in a similar manner to asphalt. For streets, a concrete foundation 8 inches thick is laid, and on this enough of the hot powder is spread to leave a 2-inch layer when well rolled.

The cost of this pavement is not given, and, as the *Schweizerische Bauzeitung*, to which we are indebted for these notes, states that the new invention must not only be as serviceable but also as cheap as the natural asphalts in order to compete with them.

NOVEL PLAN OF RAISING WATER FROM A SHAFT.

W. Galloway described before the South Wales Institute of Engineers, a short time ago, a novel plan of raising water from the shaft sunk at Llanbradach by the Cardiff Steam Coal Collieries Company.

It was known that a considerable thickness of the Pennant sandstone series, which is invariably found heavily watered, required to be passed through, and surrounding collieries have heavy pumping fittings. The absence of any means of determining the probable quantity of water to be dealt with in sinking led to special provision for winding the water to the surface. The contract provided for certain allowances whenever the water exceeded 4,000 gallons per hour, whether pumps were provided or not. The largest quantity met with was 7,500 gallons an hour in the shaft bottom. Down to a depth of 135 yards the total growth was 9,000 gallons an hour, of which 5,000 gallons was walled out by brick and cement

walling. It would have been impossible to proceed with the sinking without pumps had it been necessary to fill the water into the kettle by the ordinary means of bailing. Mr. Galloway accordingly devised what he calls a "pneumatic water barrel."

It consists of a cylindrical vessel of sheet-iron, 4 feet 2 inches in diameter, and 8 feet deep, closed at the top by an air-tight manhole door. The bottom is 5 inches above the lower edge of the cylinder, and has a circular hole in it 18 inches in diameter. This hole is closed by a faced valve of cast iron, mounted with a sheet of leather, capped and tightly clasped by an iron hoop. The valve is attached to a spindle by a ball and socket joint, by which it is kept in position, but allowed a certain amount of play so that it may readily accommodate itself to its seat. The cylinder is thus an air-tight vessel, the interior of which has communication with the exterior atmosphere only by means of a pipe, extending from close to the top of the cylinder in the inside, to the outside of the vessel half-way down. The outside end of the pipe is fitted with an instantaneous coupling identical with that used on the vacuum railway brake. In use the pneumatic water barrel is lowered into the shaft till its lower edge is under water in the shaft bottom. The interior is put into communication with a condenser air pump on the surface by attaching a flexible tube connected to the vacuum pipes in the shaft to the instantaneous coupling of the barrel. A vacuum equivalent to 20 to 22 inches of mercury is thus obtained inside the barrel, and the water rushes in through the bottom valve. A glass gauge tube on the outside of the vessel shows when it is full. The tube is detached, and the signal given to raise the barrel. When it reaches the surface a bogie is run under it, and it is lowered on a conical block of wood, which raises the valve, and the water escapes.

Prices of Building Materials.

LUMBER.

CAR OR CARGO LOTS.	
1 1/2 and thicker clear picks, Am. ins.	\$30 00 @ 32 00
1 1/2 and thicker, three uppers, Am. ins.	37 00
1 1/2 and thicker, pickings, Am. ins.	27 00
1 x 10 and 12 dressing and better.	18 00 20 00
1 x 10 and 12 mill run.	13 00 14 00
1 x 10 and 12 dressing.	14 00 16 00
1 x 10 and 12 common.	12 00 13 00
1 x 10 and 12 spruce culls.	10 00 11 00
1 x 10 and 12 maple culls.	9 00
1 inch clear and picks.	28 00 30 00
1 inch dressing and better.	18 00 20 00
1 inch siding, mill run.	14 00 16 00
1 inch siding, common.	11 00 12 00
1 inch siding, ship culls.	\$10 00 \$11 00
1 inch siding, mill culls.	8 00 9 00
Cull scantling.	8 00 9 00
1 1/2 and thicker cutting up plank.	22 00 25 00
1 inch strips, 4 in. to 8 in. mill run.	14 00 15 00
1 inch strips, common.	11 00 12 00
1 1/2 inch flooring.	14 00 15 00
1 1/2 inch flooring.	14 00 16 00
XXX shingles, sawn.	2 30 @ 2 35
XX shingles, sawn.	1 30 @ 1 35
Eastlake galvanized steel shingles, 24 W. G., per square.	6 00
Eastlake galvanized steel shingles, 26 W. G., per square.	5 00
Eastlake painted steel shingles, per sq.	4 00
Round pointed galvanized steel shingles, per sq.	6 00
Round pointed painted steel shingles.	4 25
Round pointed, unpainted, Teme tin shingles.	4 00
Manitoba galvanized steel siding, per square.	5 00
Manitoba painted steel siding, per sq.	3 50
Painted sheet steel pressed brick.	3 50
Painted crimped steel sheeting.	3 40
Price of Copper shingles according to weight.	

YARD QUOTATIONS.

Mill cull boards and scantling.	10 00
Shipping cull boards, promiscuous widths.	13 00
Shipping cull boards, stocks	14 00
Hemlock cantling and joist up to 16 ft.	11 00 12 00
" " " " 18 "	12 00 13 00
" " " " 20 "	13 00 14 00
Scantling and joist, up to 16 ft.	14 00
" " " " 18 ft.	15 00
" " " " 20 ft.	17 00
" " " " 22 ft.	19 00
" " " " 24 ft.	21 00
" " " " 26 ft.	23 00
" " " " 28 ft.	25 00
" " " " 30 ft.	27 00
" " " " 32 ft.	27 00
" " " " 34 ft.	29 00
" " " " 36 ft.	31 00
" " " " 38 ft.	33 00
" " " " 40 to 44 ft.	36 00
Cutting up planks, 1 1/2 and thicker, dry board.	25 00 26 00
Cedar for block paving, per cord.	18 00 21 00
Cedar for Kerling, 4 x 14, per M.	5 00
B. M.	
1 1/2 inch flooring, dressed, F. M.	25 00 31 00
1 1/2 inch flooring rough, B. M.	18 00 22 00
1 1/2 " " dressed, F. M.	25 00 28 00
1 1/2 " " undressed, B. M.	18 00 19 00
" " " dressed.	18 00 22 00
" " " undressed.	12 00 15 00
Headed sheeting, dressed.	22 00 35 00
Clapboarding, dressed.	22 00 32 00
XXX sawn shingles, per M, 16 in.	2 65 2 75
Sawn lath.	2 00 2 20
Red oak.	30 00 40 00
White.	35 00 45 00
Basswood, No. 1 and 2.	18 00 30 00
Cherry, No. 1 and 2.	70 00 70 00
White ash, No. 1 and 2.	25 00 35 00
Black ash, No. 1 and 2.	20 00 30 00
Dressing stocks.	16 00 22 00
Picks, American inspection.	40 00
Three uppers, American inspection.	50 00
BRICK—W M	
Common Walling	\$7 50
Good Facing	9 00
Sewer	8 50 9 00
Pressed Brick	
Plain brick, f. o. b. at Milton, per M.	\$17 00
" " " and quality, per M.	13 00
" " " 3rd " " " "	10 00
Hard Building.	8 00
Moulded and Ornamental, per 100	\$3 to 10 00
First quality, f. o. b. at Campbellville, per M	16 00
2nd " " " "	13 00
3rd " " " "	10 00
Hard Building.	8 00
Ornamental, per 100.	\$3 to 10 00
Tiles	24 00
Stone.	
Common Rubble, Per Toise, delivered	14 00
Large flat " " "	18 00
Foundation Blocks, " Cubic Foot.	35
Slate: Roofing (per square).	
" red.	16 00
" purple.	9 00
" unfading green.	9 00
" black slate.	7 50
Terra Cotta Tile, per sq.	25 00
Ornamental Black Slate Roofing.	8 00
Sand:	
Per Load of 1 1/2 Cubic Yards.	1 25
PAINTS. (In oil, per lb.)	
White lead, Can.	6 25 6 50
" zinc, Can.	6 50 7 50
Red lead, Eng.	5 50 6 25
" venetian.	1 60 1 75
" vermilion.	90 1 00
" Indian, Eng.	10 12
Yellow ochre.	5 10
Yellow chrome.	15 20
Green, chrome.	7 12
" Paris.	35 40
Black, lamp.	15 25
Blue, ultramarine.	15 25
Oil, linseed, raw (per Imp. gallon).	68 70
" " " boiled.	72 75
" " " refined.	78 80
Putty.	2 1/2 2 1/2
Whiting, dry.	75 1 00
Paris white Eng. dry	90 1 25
Litharge, Am.	6 1/2 8
Sienna, burnt.	15 20
Umber.	8 1/2 12
CEMENT, LIME, etc.	
Lime, Per Barrel of a bus' 1/4, Grey.	40
" " " " White.	55
Plaster, Calcined, New Brunswick.	2 00
" " " Nova Scotia.	2 00
Hair, Plasterers', per bag.	1 00
Cement, Portland, per bbl.	2 80 3 00
" Thorold.	1 50
" Queenston.	1 50
" Napanee.	1 50
" Hull.	1 50
HARDWARE.	
Cut Nails:	
American Pattern, 1 1/2 inch, per keg.	4 00
" " " 1 1/2 to 1 3/4 inch, per keg	3 30
Canadian Pattern, 1 1/2 inch, per keg.	3 55
" " " 1 1/2 to 1 3/4 inch, per keg	3 00
" " " 2 to 2 1/2 inch, "	3 00
" " " 2 1/2 to 3 inch, "	2 80
" " " 3 inch and larger.	2 50
Steel nails 10c. per keg extra	
Finishing nails, 1 inch, per keg.	5 60
" " " 1 1/2 inch, "	4 90
" " " 2 inch, "	4 40
" " " 2 1/2 inch, "	4 15
" " " 3 inch and larger.	3