object is to collect and carry off from the still the heavier oils resulting from any condensation which may, and will unavoidably to some extent, occur in the upper part of the still. The invention consists in an elevated exit chamber surrounding a central chimney, and a number of dome-shaped plates in the body of the still, with surrounding gutters and proper outlets.

Boiler Incrustation.

A plan of preventing boiler incrustations recently adopted in France, consists in lining the boiler with a metallic network at some distance from the sides. The lime salts will, of course, be deposited upon the network, which can be easily removed, and from which the crust can be easily detached.

Practical Memoranda.

Horse Power.

Many have but an erroneous idea of the drawing power of a horse. Some, probably, have no idea that approaches correctness. The strength of different horses undoubtedly varies a great deal, but in calculating the power of an engine, the horse power is estimated as equivalent to a force capable of raising or moving 150 pounds 20 miles a day, at the rate of two and a half miles per hour. This seems small, but experiments have actually shown the power of the farm horses in this country to be considerably less.

On a level road or floor the horse is ordinarily as strong as five men; but up a steep incline the man has the advantage, for it has been found a man can rise a steep hill with a load where it would be out of the power of a horse to climb. A man of ordinary strength, placed in a position to exert his strength to the greatest advantage, can apply more power than a horse in drawing from a point two feet above the ground. It requires a heavy pair of horses to exert a force of five hundred pounds in such a position

As the horse's speed increases, his power of draught diminishes very greatly, till it becomes very difficult for him to move his own weight. On soft roads the draught is not so much affected by the speed, and the resistance is very little, if any, greater in a trot than in a walk; but a carriage on dry, hard pavement requires one-half greater force when propelled in a trot or a walk.—*Mass. Ploughman.*

Momentum.

If a train moving at the rate of twenty-five miles an hour were stopped instantaneously, the passengers would experience a concussion equal to that of a body falling from a height of nineteen feet; they would be hurled against the sides of the carriage with a force equal to that which they would be exposed to in falling from a window on the second floor of a house. If the train were moving at the rate of thirty miles per hour, they might as well fall from a height of three pairs of stairs; and an express train would, in point of fact, make them fall from a fourth story. Instantaneous breaks are therefore to be avoided if possible.

On Scientific Experiments in Balloons.

BY JAMES GLAISHER, ESQ., F.R.S., ETC.

The *London Artisan* publishes a long letter by Mr. Glaisher giving the results of his observations in balloons on the temperature and moisture of the atmosphere, from which we take the following tables:—

"DECREASE OF TEMPERATURE WITH ALTITUDE.

WHEN THE SKY WAS CLOUDY.

Feet.	Feet.		Deg.		Feet.
From 0 to	1,000	the decrease was	4·5	or 1 deg. on the average of	223
From 0 to	2,000	"	8·1	"	247
From 0 to	3,000	"	11·8	"	365
From 0 to	4,000	"	15·2	"	263
From 0 to	5,000	"	18·5	"	271
From 0 to	6,000	"	21·7	"	277
From 0 to	7,000	"	34·4	"	287
From 0 to	8,000	"	26·8	"	299
From 0 to	9,000	"	29·0	"	311
From 0 to	10,000	"	31·0	"	321
From 0 to	11,000	"	33·0	"	329
From 0 to	12,000	"	35·6	"	337
From 0 to	13,000	"	37·8	"	344
From 0 to	14,000	"	40·1	"	349
From 0 to	15,000	"	42·1	"	356
From 0 to	16,000	"	44·2	"	362
From 0 to	17,000	"	45·4	"	375
From 0 to	18,000	"	46·7	"	386
From 0 to	19,000	"	48·1	"	395
From 0 to	20,000	"	49·0	"	409
From 0 to	21,000	"	50 1	"	419
From 0 to	22,000	"	50·9	"	432
From 0 to	23,000	"	51·7	"	445

WHEN THE SKY WAS CLEAR, OR CHIEFLY CLEAR.

Feet.	Feet.		Deg.		Feet.
From 0 to	1,000	the decrease was	6·2	or 1 deg. on the average of	162
From 0 to	2,000	"	10·9	"	184
From 0 to	3,000	"	14·7	"	204
From 0 to	4,000	"	18·0	"	223
From 0 to	5,000	"	20·9	"	239
From 0 to	6,000	"	23·5	"	259
From 0 to	7,000	"	26·0	"	271
From 0 to	8,000	"	28·7	"	279
From 0 to	9,000	"	31·2	"	289
From 0 to	10,000	"	33·6	"	298
From 0 to	11,000	"	35·6	"	309
From 0 to	12,000	"	37·9	"	317
From 0 to	13,000	"	40·1	"	324
From 0 to	14,000	"	42·1	"	333
From 0 to	15,000	"	43·8	"	343
From 0 to	16.000	"	46·0	"	348
From 0 to	17.000	"	47·9	"	355
From 0 to	18,000	"	49·6	"	363
From 0 to	19,000	"	51·1	"	372
From 0 to	20,000	"	52·4	"	382
From 0 to	21,000	"	53·6	"	392
From 0 to	22,000	"	54·7	"	405
From 0 to	23,000	"	55·7	"	413
From 0 to	24,000	"	57·0	"	422
From 0 to	25,000	"	58·1	"	431
From 0 to	26,000	"	59·1	"	441
From 0 to	27,000	"	60·1	"	449
From 0 to	28,000	"	61·0	"	459
From 0 to	29,000	"	61·8	"	469
From 0 to	30,000	"	62·3	"	482

These results, showing the whole decrease of temperature from the ground to 30,000 feet, differ greatly, as just mentioned, from those with a cloudy sky.

The numbers in the last column, showing the average increase of height for a decline of 1° of temperature from the ground, to that elevation, are all smaller than those with a cloudy sky at the same elevation. Each result is based upon at least seven experiments, taken at different times of the year, and up to this height considerable confidence may be placed in the results; they show that a change takes place in the first 1,000 feet of 1° on an average in 162 feet, increasing to about 300 at 10,000 feet. In the year 1862 this space of 300 feet was at 14,000 feet high, and in 1863 at 12,000 feet. Therefore, the change of temperature