

larly the latter; and it consists of two or more pieces of wire or links jointed together to pass around the gathered mouth of the bag, and provided with a tongue or arm, by which the jointed ends are drawn up and locked in place.

An improvement in bob-sleighs has been patented by Mr. Gilbert Hermance, of Nassau, N. Y. The object of this invention is to so construct a sleigh with knees and beams that the runners will act entirely independent of each other, and thus insure smoothness and evenness in the running of the sleigh, and prevent straining and twisting.

An improvement in safety-pockets has been patented by Mr. Joseph Colton, of New Orleans, La. The object of this invention is to furnish an improved pocket for carrying a watch and money, so constructed that its contents may be safe from pickpockets.

Mr. Fendal D. Thurman, of Atlanta, Ga., has patented an improvement upon the harness for which letters patent were granted to him May 20, 1879, in which a rigid yoke or collar, closed at top and open at the bottom, is connected with rigid tug hooks on the shafts, and constitute, in connection with a belly band, the only parts which are necessary to gear up the horse. The improvement consists in making the collar in two pieces, connected at the top by a flexible pad and at the bottom by a strap, and combining it with loose tugs on the shaft, which are bent inwardly at their front ends, so as to take the draught strain from the center line of the collar bars, while the belly band is connected to the loose tugs in front of their pivots.

An improvement in bale ties, patented by Mr. Ira M. Camp, of Navasota, Texas, consists of a buckle or plate made in the form of the letter C, and having opposite seats in the short bend of the letter for the looped ends of the bale band, from one of which seats there extends the curved or semi-circular arm, completing the C, and which serves both to contract the band with a cam and lever action when inserted, and to lock the buckle or plate by lapping over underneath, or through the looped end of the band on the opposite side.

Mr. Nelson Birdsall, of Ashland, Va., has patented an improved machine for sowing, drilling, or planting any kind of seed or fine fertilizer. The construction and operation of the machine cannot be clearly described without an engraving.

Mr. James A. Hill, of Davis Cross Roads, Ala., has patented an improved combined seed planter and fertilizer distributor, which is so constructed as to open a furrow, deposit guano or other fine fertilizer in it, cover the guano, drop cotton seed upon the covering soil, and cover the seed; which may also be used for opening a furrow, dropping small seeds into the furrow, distributing a fertilizer upon the seed, and covering it.

An improvement in fertilizer distributors and seed drills, patented by Mr. Adolphus F. Gibboney, of Belleville, Pa., relates to a force-feed formed by two meshing worm wheels having their axes in different planes, and one of them located within and the other outside of the hopper; also, to mechanism for shifting the position of the fertilizer and seed tubes or drills independently of the hopper; for the purpose of depositing the fertilizer and seed in rows at different distances apart; and to the means for throwing into or out of gear, and thus starting or stopping the mechanism for discharging the seed and fertilizer.

Mr. Byron B. Small, of North Lubec, Me., has devised an improved machine for cultivating and hoeing plants which is simple in construction, convenient and effective in operation, and which may be readily adjusted as the work to be done may require.

Mr. Warren Holden, of Philadelphia, Pa., has patented an improved drawing table, which is so constructed that the drawing paper may be adjusted to bring the part of the paper upon which the artist is at work close to him without exposing the paper to injury, and which will allow the artist to work upon long strips of paper and have the part upon which he is at work close to him at all times, while protecting the other parts of the paper from being soiled or injured.

Mr. Henry E. Hunter, of Hinsdale, N. H., has invented an improvement in combined galvanic and medicated pad, which consists in the combination of a galvanic battery, formed of plates of zinc, felt, and copper, and a medicated pad, so that a circuit of galvanic electricity may be incited by moisture absorbed from the patient's body, while at the same time the patient receives benefit from the medicaments contained in the pad.

Messrs. Louis A. Brument and Sigmund Goldberg, of New York city, have patented a portable balcony of ornamental character adapted for attachment upon a window sill for the purpose of giving an improved appearance to a house, and for use as a support for flower pots, etc. The balcony may remain as a permanent fixture or be removed with facility as required.

#### Cattle Raising in Wyoming.

A correspondent of a Chicago paper, writing from Cheyenne, Wyoming, gives an interesting statement of the cost and profit of stock raising in that Territory. He says that a herd of 1,000 Texas cows and 40 short horn bulls cost, at a liberal estimate, \$15,000. In five years the natural increase gives 5,000 head of cattle, old and young, worth not less than \$70,000.

Five men, including the foreman of the ranch, are sufficient to take care of 4,000 cattle. A good foreman can command \$75 per month. An ordinary herder receives \$35 per month. The cost of necessary ranch buildings is trifling. The total expense of a herd of the number above mentioned

for five years may be placed at \$35,000, this including a contingent loss of five per cent of the cattle, leaving a net profit of \$40,000 on the \$15,000 invested five years before. The cattle business in Wyoming is very large and rapidly increasing. At the commencement of 1879 there were in the Territory 277,000 head, of an average value of \$15 per head, making a total value of over \$4,000,000. From various points in Wyoming there were shipped in 1878 some four thousand car loads of cattle, worth in Chicago \$3,000,000. During 1879 a considerable advance was made in the number shipped, the larger part of the shipping being done in the last quarter of the year.

#### Correspondence.

##### Fire from Steam Pipes.

To the Editor of the Scientific American:

What tests and experiments have been made regarding the liability of woodwork being fired from contact with steam coils? I wish to learn if such experiments go to show that liabilities from fire are greater where wood is in contact with steam coils.

D. E. SMITH.

Community, Oneida, N. Y.

The following reply to the above article has been furnished us by Mr. Wm. J. Baldwin:

To the Editor of the Scientific American:

In answer to D. E. Smith, Oneida Community, N. Y., I will say fourteen years' observation has led me to the conclusion that it is utterly impossible to fire wood, or even touchpaper or tinder, with steam in pipes up to any pressure of steam at maximum density—i. e., not superheated—that can be carried on any ordinarily constructed boiler.

Why do not the wooden lagging of steam engine cylinders, portable boilers, and large steam pipes on steamships, etc., take fire? or the dust that accumulates on steam coils in woodworking machine shops? Simply because the temperature of the steam pipe is not sufficiently high, and that the lowest temperature capable of doing so is between 500° and 700° Fah.

But some will hint at conditions and make use of the words "concentration of heat" and "spontaneous combustion."

Heat of this description cannot be concentrated, and is not capable of making anything hotter than itself, and spontaneous combustion has no place in our consideration, other than, if we are dealing with substances that are likely to fire spontaneously, heat will assist them, whether from steam pipes or any other source.

No one imagines they can light a stick against a boiling kettle (temperature 212°), but many will say, How would it be if I had 100 or 200 pounds of steam, it would be so much hotter then? It will be hotter. The following table shows the increase in temperature for each 100 pounds in pressure (above atmosphere) up to 400 pounds. Let them judge for themselves:

Pressure.	Temp. Fah.	Increase temp.
1 lb.	214°	
100 lb.	338°	124° 1st 100
200 lb.	388°	50° 2d "
300 lb.	422°	34° 3d "
400 lb.	448°	26° 4th "

Respectfully,

WM. J. BALDWIN, Heating Engineer.

Elmira, N. Y., January 1, 1880.

#### Boxwood in Russia.

Boxwood grown in the forests on the shores of the Caspian Sea is, says the *Gardener's Chronicle*, a large article of trade with Russia. This wood reaches Astrachan and Nizni-Novgorod in the spring of the year, where it is sold during the fair. Last year the quantity so sold was about 130,000 poods, being about 80,000 poods in excess of other years. It is pointed out in a recent report that the increased demand for this boxwood, which is used for shuttle-blocks, indicates increased prosperity among Russian manufacturers.

On the subject of boxwood the acting British Consul at Tiflis writes: "Bona fide Caucasian boxwood may be said to be commercially non-existent, almost every marketable tree having been exported. Such exorbitant terms are demanded by the government for the right of cutting in one or two remaining Abkhasian boxwood forests as virtually to bar their acquisition." He goes on to say that having personally visited these forests he is in a position to assert that their real value has been considerably exaggerated, most of the trees being either hollow or knotted from age, and much of the best wood having been felled by the Abkhasians previous to Russian occupation.

The boxwood at present exported from Rostov, and supposed to be Caucasian, comes from the Persian provinces of Mazanderan and Ghilan, on the Caspian. What has been said respecting boxwood applies equally to walnut burrs, or "loupes," for which the Caucasus was once famous, 90 per cent of which now come from Persia. The walnut trees of the forests along the Black Sea, which are extraordinarily numerous, and afford excellent material for gunstocks, do not, from some climatic peculiarity, produce burrs, which are only found in the drier climates of Georgia, Daghistan, Persia, etc. The immense quantity of walnut timber in the forests on the Black Sea is mostly unavailable from the complete absence of roads or means of transport, and the dearth and scarcity of labor.

#### Telegraph Wires in New York City.

An elaborate examination of the telegraphic and telephonic systems of wires in this city has been made by Mr. R. D. Radcliffe, with a view to the working out of a plan for laying the wires underground. On a large map of the city Mr. Radcliffe has made the location of every telegraph instrument in the city, whether Western Union, the Atlantic and Pacific, the Gold and Stock, the Police, the Fire Department, the Bell Telephonic, the American District, or what not, and from a study of this map he has perfected a plan for consolidating the lines of the city, which he thinks is entirely practicable. His plan is to have three great trunk lines running north and south—one through Third avenue, one through Sixth avenue, and another through Ninth avenue. From these trunk lines lead branch lines east and west through every second street, the wires being taken from the trunk lines and conducted on poles to the place desired. He does not advocate laying these branch lines underground unless there are more than twenty of them in the same street, and he does not advocate laying telephone wires underground, for the location of telephones is liable to constant changes. He finds that, under his plan, instead of 9,000 or 10,000 telegraph poles now standing, 1,500 or 1,600 poles will serve every instrument in the city in a complete and economical way.

In explaining his plan to a *Sun* reporter, Mr. Radcliffe said: "The greatest number of wires that would have to be conducted through one trunk line is 841; and they would run across Broadway, from the main building of the Western Union at Broadway and Dey street, and down John street. Of these 841 wires, 583 will go down town to the great commercial centers, and 258 go up town on the east side, decreasing in number, of course, as wires are led out to the side streets, until the trunk line reaches the Harlem bridge at 130th street with only 49 wires. The route of this trunk line would be down John to Pearl street, and thence up town, following the line of the elevated railroad. The 583 wires that run down town would be conducted by a series of underground trunks, terminating at the Produce Exchange, on Pearl and Whitehall streets, with 72 wires.

"The center and western trunk lines would start together at the main building, with 330 wires, and run down Dey to Church street, where 190 wires would turn up Church street and follow the line of the Metropolitan Elevated Road to Fifty-third street. The other 140 wires would continue down Dey to Greenwich street, and then turn up town, following the route of the west side elevated road. At Fifty-third street the center trunk line will have only 20 wires. These I would run across to the west side trunk, which at Fifty-third street will contain 57 wires. These 69 wires will then be conducted up town on the west side to 125th street, where the trunk will contain only 15 wires, which there leave the trunk and follow the line of the Hudson River Railroad north.

"Many of the wires of the west trunk leave it at Fifty-fifth street and cross the Hudson River in cables, and then go to the lines of the different railroads.

"Below John street, and on the east side of Broadway, there are more instruments than in any other part of the town, but they cannot be reached by the same system of trunk lines and branches that can be used up town. That whole territory must be covered by underground systems, and the proper disposition of the lines has given me much trouble, but I think I have solved the problem."

Touching the mileage of wires in the city and their probable increase, Mr. Radcliffe said: "My data was ascertained several months ago. There were then in this city 1,148½ miles of Western Union wires; 290½ miles of Atlantic and Pacific wires; the Gold and Stock Company had in their stock interest department 151 miles, and in their private line department 1,330 miles; the Bell Telephone Company, about 500 miles; American District Telegraph Company, 300 miles; Fire Department, 702 miles; Police Department, 90 miles; Law Telegraph, over 100 miles, and American Union, about 30 miles—making in all 4,662½ miles of telegraph wire in New York city.

"I find that the Western Union and Atlantic and Pacific Companies, the companies that do a commercial business, have not increased their mileage more than 20 per cent in the past two or three years, and that the local companies are increasing their mileage very rapidly. For instance, the American District Telegraph Company, started in 1872, has placed 300 miles of wire in seven years, and is growing an increasing ratio yearly. The Bell Telephone Company placed its first telephone in September, 1878, and at the end of another year will have added, at their present ratio of increase, 1,000 miles more to their 500 miles. The growth of the private department of the Gold and Stock Company is at the rate of 40 miles a month now. Judging from these data, I conclude that the trunk lines ought to have a capacity of 1,000 wires each to meet the demand that the increase in the telegraphic business is going to make in the coming ten years."

#### Samuel S. White.

In the death of Samuel S. White the dental profession loses one of its most efficient promoters, and the public at large a most respected and useful citizen. His business career has been remarkable, both for its success and its highly honorable character. Of late years Dr. White, in addition to his manufacture of artificial teeth, which he carried to the highest excellence, has given much attention to the improvement of dental machinery, implements, and furniture.