Durable Timber.

One of the properties conducive to durability in timber is its odoriferousness; woods which are so being chiefly the most durable. Close and compact woods, which make the most charcoal, are more permanent than open and porous qualities. The chestnut has rather more carbonaceous matter than oak, and, therefore, by reason of it, is more durable. Experiment has, however, shown the error of relying too much on these broad theories. One writer alludes to an experiment made to determine the comparative durability of woods. Planks of trees 1½ inches thick, of from 30 to 45 years' growth, were exposed to the weather 10 years. Cedar and chestnut were perfectly sound, spruce and fir sound, larch sound in heart, silver fir in decay, Scotch fir decayed, beech sound, walnut in decay, sycamore much decayed, birch quite rotten.

We must accept even these facts with caution. The questions whether the planks had been cut the same length of time, how they had been dried or seasoned, and the position they had occupied, are pertinent to the inquiry. The same wood often shows varying degrees of durability, owing to the position of the tree. If grown in moist and shady parts, the wood is inferior to that which grows in an exposed situation open to the sun and air. Some timber is more durable in wet ground or immersed in water; such are elm, beech, alder; while others, such as ash, oak, and fir, are more durable in dry situations. The increase in strength due to seasoning of different woods is given as follows: White pine, 9 per cent; elm, 12·3 per cent; oak, 26·6 per cent; ash, 44·7 per cent; beech, 61·9 per cent.

The comparative value of different woods, showing their crushing strength and stiffness, is: Teak, 6,555; English oak, 4,074; ash, 3,571; elm, 3,468; beech, 3,079; mahogany, 2,571; spruce, 2,522; yellow pine, 2,193; sycamore, 1,833; cedar, 700.

Regarding the relative degrees of hardness, shell-bark hickory stands highest; calling that 100, white oak is 84; white ash, 77; dogwood, 75; scrub oak, 73; white hazel, 72; apple, 70; red oak, 69; beech, 65; black walnut, 65; yellow oak, 60; white elm, 58; hard maple, 56; wild cedar, 55; yellow pine, 54; chestnut, 52; white pine, 30.

For furniture, hard birch, ebony, mahogany, maple, sycamore, and walnut are commonly used; while for turnery, acacia, hard hawthorn, holly, hard laurel, lignum vitæ, poplar, sassafras, sycamore, and yew are employed. For very great hardness, ironwood, hornbeam, almond, hard beech, teak, thorn, are serviceable. Myrtle, lime, box, olive, pear-tree, sycamore, kauri wood, pine, and holly are also very even, close grained, and hard.—*Building News.*

Electric Cables.

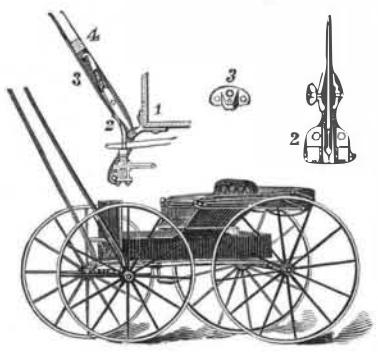
The attempts which are made to devise a practical and cheap system of undergound telegraphs continue to be numerous, but the actual progress which is made is not very marked. A history of underground telegraphs would indeed be a long list of failures, commencing in 1837 with the so-called "fossil" telegraph of Wheatstone, which consisted of bare wires placed in grooves in lengths of oak scantling. Most of these failures have not been due so much to actual defects in the inventions as to the inability of the inventors to push their commodities, owing to force of circumstances. The use of gutta percha shows no signs of falling off, and no substance has yet been brought into the market which has been proved to be a substitute for it.

Great attention is now being paid, says the *Electrical Review* (London), to lead-covered cables, the insulation of the latter, as in the Berthoud-Borel system, being due to resinous substances, which are far cheaper than gutta percha. Provided the lead covering remains intact, there is no reason whatever why such cables should not remain good for an indefinite period. In certain soils lead is practically imperishable; but, again, where clay is present, rapid decay occurs. About ten years ago a cable consisting of a cotton-covered wire placed in a lead pipe, the latter being filled with paraffine wax, was laid in Windsor Park in a clay soil; in a very short time this line became defective, and on examination it was found that the lead covering had been eaten into holes, which, by admitting moisture, rendered the wire useless; in this case the paraffine wax was not able to effectually coat the copper core. Excellent as paraffine wax is as an insulator, it has the great defect that it shrinks very considerably on cooling, and is therefore extremely liable to crack; indeed, most substances of this nature possess this element of uncertainty, and when used as insulators they practically can only be relied upon as "separators" to prevent metallic contact between a number of wires, or between the latter and a metal sheathing, the sheathing being the medium which keeps moisture out.

Lead, as a protecting covering, necessarily means considerable weight, and as a means of preserving single wires could hardly be adopted to any great extent. Multiple cables would have more chance of success, though the fact that the units of which they are built up are practically inseparable is a disadvantage; and, moreover, if moisture does penetrate, it means that nearly all, if not all, the wires will become defective. For very special purposes, however, the lead-covered cables should prove to be all that can be desired. The use of paraffine oil as an insulator in the Brooks system has yielded excellent results, and is an undoubted success, but we are inclined think that more satisfactory results might be obtained from a semi-fluid material, *i. e.*, one which would not be liable to become dispersed by leakage; but which would at the same time have the property of settling down if by any chance it were disturbed, and thus sealing up accidental faults. There seems at present but little chance of India rubber or gutta percha being superseded for submarine purposes, but the employment of a cheap yet efficient substitute for either of these materials would probably give a renewed impulse to such telegraphy, and would richly reward the inventor.

IMPROVED SHAFT SUPPORT.

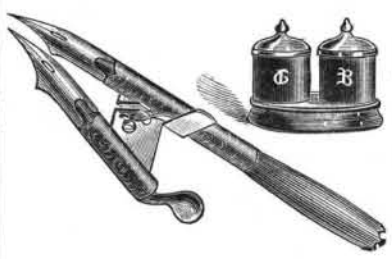
Attached to the forward part of the body of the vehicle is an angle plate or casting, from the outer angle of which project two lugs, between which the end of the fork is bolted. The plate may be secured to the center of the front of the body or to one corner, and can be fitted to vehicles having bodies of different forms. Each shank of the fork—shown detached in Fig. 2—is provided with a bend forming a recess for receiving clamping plates which have their adjoining faces serrated. A right and left hand screw is passed through the plates, between which is held a longitudinally slotted bar serrated on both sides to correspond with the serrations on the plates. The free end of the bar is formed with a downwardly projecting hook. When the shafts are to be held in a raised position, this hook enters a pocket (Fig. 3) secured to the shafts. The fork is pressed upward by a powerful spring, one end of which is held between the lugs projecting from the angle plate, while the other end bears against the under side of the fork. The length of the shaft support can be varied by moving the slotted bar in or out, the latter being firmly held in any desired position by the clamping plates. When not in use, the support is held in a vertical position in front of the dash board.



This invention has been patented by Mr. James F. Pace, and particulars can be obtained from from Messrs. Pace & Feibleman, of Simsboro. La.

AUTOMATIC DOUBLE-POINTED PEN HOLDER.

The pen herewith illustrated is specially adapted to the use of bankers, architects, bookkeepers, etc., and with it two lines can be ruled at once with different colored inks. Although expressly designed for ruling purposes, it gives most satisfactory results when used for ornamental or fancy writing. From the side of each holder projects a plate, the ends of the plates being pivoted together. Each of the adjoining ends of the plates is formed with an ear, one of which is apertured and threaded to receive a set screw, by means of which the pens can be adjusted to rule lines of any desired distance apart up to three-quarters of an inch. The pen holders are held pressed toward each other by a spring that permits the writer to separate the pens and take ink as quickly as with the common pen. Any kind or size of gold or steel pen can be used.



The inventor and manufacturer of this pen holder, Mr. C. R. Arnold, of Wellsville, Ohio, has designed a two-well inkstand, shown in the engraving, and a three-fourths-round ruler for use with the holder. Most favorable testimonials have been received from those who have used these holders.

Pyronaphtha.

According to the *Organ fur Oelhandel*, an interesting trial was lately made in St. Petersburg with a new illuminating material, which is destined, it is considered, to take the place of kerosene. This is a new illuminating oil, absolutely free from danger of fire. An experiment was made as to the power which pyronaphtha has of extinguishing fire; and it was found that burning kerosene was easily put out by it. Pyronaphtha can, however, itself be extinguished by water. It is a product of the distillation of naphtha residue, of which large quantities remain from the Baku distillation of petroleum. From these illuminating gas is produced, and likewise pyronaphtha. The idea would seem to have hitherto been carried out only by the firm of Ragosin & Co., of Baku. The celebrated Russian chemist, Prof. Beilstein, has examined pyronaphtha, and has expressed his conviction that it has a brilliant future before it, and that it must eventually replace American and Russian kerosene. The specific gravity of pyronaphtha is 0·864, and it ignites only at 230° Fah. It burns without smoke and vapor at 257°; gives a better light than kerosene; is consumed less rapidly; while its prime cost is less. At St. Petersburg it is being adopted for domestic use; and a special burner has been constructed for the purpose.

Habits of the Scorpion.

A writer in *Land and Water* relates his experience with scorpions as follows:

A few years ago, while in the island of Jamaica, it was my fortunate chance to have an opportunity of observing some very curious facts in connection with that genus of the Arachnida class commonly known as the scorpion, and the curious traits of character in these insects. Turning over some old papers in my office one day, I suddenly came upon a large black scorpion, who promptly tried to beat a precipitate retreat. Having read or heard somewhere that if you blow on a scorpion he will not move, I tried the experiment, and was greatly astonished to find that it had the desired effect. The scorpion stopped instantly, flattened himself close to the paper on which he had been running, and had all the appearance of "holding on" for dear life. While I continued to blow even quite lightly he refused to move, though I pushed him with a pencil and shook the paper to which he clung so tenaciously. Directly I ceased blowing he advanced cautiously, only to stop again at the slightest breath. I was thus able to secure him in a glass tumbler which happened to be within reach, and then I determined to try another experiment as to the suicidal tendencies which I had heard ran in the veins of the Pedipalpi family.

On the stone floor of the kitchen attached to my office I arranged a circle of burning sticks about three yards in circumference, the sticks being so placed that though there were no means of exit through the fire, it was not intense, but small and quite bearable as regards heat within a few inches, so that the central part of the circle was perfectly cool. Into this center I accordingly dropped my scorpion, who, on touching *terra firma*, darted off in a great hurry, only to be quickly brought to a halt on reaching within a few inches of the periphery of the circle. After a short pause of reflection he deviated to the right, and ran once completely round the circle as near to the fire sticks as it was prudent to venture. This he did three times, often approaching the burning sticks quite closely in his anxious endeavors to escape. In about a quarter of an hour, finding that his efforts were useless, he retired almost into the exact center of the circle, and there in a tragic manner raised his tail till the sting or spur was close to his head, gave himself two deliberate prods in the back of the neck, and thus miserably perished by his own hand. As I placed the body of the suicide in a bottle of spirits, I almost regretted that I had not let him escape before he had resorted to such an extreme measure.

My last experience is even more curious than the preceding, as it shows a remarkable provision of nature that is almost incredible. All I have ever read on this point is contained in the following words:

"The young scorpions are produced at various intervals, and are carried by the parent for several days upon her back, during which time she never leaves her retreat."

I was playing a game of billiards in a small village in the Blue Mountains; there was no ceiling to the room, the roof being covered, as is the universal custom in Jamaica, with cedar wood shingles. My opponent was smoking a large pipe, and suddenly, just as I was about to play a stroke, what I thought was the contents of my friend's pipe fell on the table close to the ball at which I was aiming. Instinctively I was on the point of brushing it off with my hand, when, to my amazement, I saw it was a moving mass, which on closer inspection turned out to be a very large female specimen of a scorpion, from which ran away in every direction a number of perfectly formed little scorpions about a quarter of an inch in length. The mother scorpion lay dying upon the billiard cloth, and soon ended her feeble struggles, the whole of her back eaten out by her own offspring, of which as they could not escape over the raised edge of the billiard table, we killed the astonishing number of thirty-eight. They had not only been "carried by their parent," but they had lived on her, cleaning out her body from the shell of her back, so that she looked like an inverted cooked crab from which the edible portions have been removed. She had clung to her retreat in the shingled roof until near the approach of death, when she had fallen and given us this curious spectacle. I was told by the attendant that the young scorpions always live thus at the expense of their mother's life, and that by the time her strength is exhausted the horrid offspring are ready to shift for themselves.

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Curious Experiments in the Transfusion of Blood.

The transfer of blood from the bodies of healthy persons to those of the sick for the purpose of sustaining the strength and prolonging life has been practiced by physicians, with limited success, for several centuries.

Some very curious experiments in this direction have been lately made in Denver, Col., by Mr. G. A. Armitage, an account of which, written by his assistant, Mr. James L. Finch, was given in the Denver *Daily News*, from which we quote the following:

The subject operated upon was a medium sized terrier dog. It was securely tied, and an incision made in an artery in his neck, by which the animal was bled to death. He certainly passed through all the symptoms of dying, and soon after the last blood issued from the wound his frame became fixed and rigid, and his eyes showed the senseless glare of death. The room was kept at a temperature of 70° Fah., while the dog lay for three hours dead. By this time he had become very stiff and cold. He was now placed in a warm water bath that was constantly maintained at a temperature of 105°, and was continually and thoroughly rubbed, and as he became pliant his limbs were gently worked about and his whole body rendered supple. A half pint of hot water was now passed into his stomach through a hard rubber tube that was forced down his œsophagus. When this was accomplished, the mouth of a rubber tube, attached to a bellows, was introduced into his windpipe, and as the bellows were provided with a double valve, by which the air could be withdrawn as well as inhaled, the dog's nose was securely fastened up.

A large and powerful Newfoundland dog that had been obtained for the purpose had been tied near by, and was now bled, while the attending surgeon proceeded to adjust the transfusing apparatus, and began to slowly inject the live dog's blood into the dead one. Simultaneously Mr. Armitage began slowly working the respiratory bellows, while I kept rubbing the animal and bending his limbs and body to facilitate circulation. We could not have been more anxious about the issue of our efforts if they had been made on a human being instead of a dumb brute. When a pint of fresh blood had been injected, I could see some change about the eyes of the dog. But no one spoke. One thought was common to all—would life come back? In a few moments more there was certainly a convulsive tremor noticeable in the body. Mr. Armitage in undisguised excitement said to the surgeon, "Press the blood." In a minute or two more the dog gasps, and soon attempts to eject the respiratory tube, which was accordingly withdrawn. This was followed by gasps and a catching of the breath, while the eyes grow brighter and more natural. The rubbing and blood injecting were yet applied, and the dog was struggling as if in a fit. But his efforts soon became less violent, and he begins a low whine. A compress was now placed on the artery, and in twenty-two minutes after the first blood was injected, he sits up, after having been dead three hours and twenty minutes. The dog then drank a broth that had been prepared for him in case of his revival, and soon got up, and walked about. He was furnished a comfortable bed near the stove, and from this time forward his recovery was so rapid that in two days he was turned out to run the streets. He is now a rugged character in good health, with seemingly no bad remembrance of his resurrection.

The second case was tested on the second day of December. The subject selected was a calf six weeks old. The details of treatment were similar to the foregoing, except for greater convenience a hot vapor bath was substituted for the warm water immersion. The calf, after being bled to death, was left for twelve hours before its resuscitation was undertaken, as it was desirable to see if a longer death interval could be successfully passed over. The fresh blood injected into its circulatory system was drawn from a yearling steer. It required thirty-five minutes to restore the calf to life after the transfusion of the first blood. The calf then drank some warm milk, and has since grown and thriven without perceptible interruption or ailment.

The next experiment was of a different character, and was made with a view to see if a drowned animal could be restored to life. A small dog was forced under water, and drowned. He was then taken out, and laid with his head inclined downward to drain his lungs of water, and left for four hours in a warm room. It will be noticed that this was quite a different and more hopeless case than the preceding, as the dog had all his own blood yet in his veins. After an hour in the warm bath, and constant rubbing and working, his veins were opened at three different points to admit of the escape of any blood that might issue from them, and the injecting apparatus was vigorously applied to the arterial system. After fifty minutes of anxious labor, signs of revivification were observable. The poor beast whined piteously as life was being once more enthroned within him. Notwithstanding great care was taken of him, he remained weak for several days, but seems now to be in good condition.

A fourth case was recently tried, in which the subject was a dog that was strangled and afterward frozen—as he could not be frozen without strangling—was unsuccessful. After four hours of labor, no signs of returning life were notable. It is believed, however, that this experiment may yet succeed, and the life of a frozen animal restored.

It is proper to add that, in the first cases, after the blood ceased to flow from the wound, measures were taken to prevent air entering the circulatory system as the animal cooled, and in all the cases the respiratory apparatus was nicely adjusted to the capacity of the animal. If the lungs in any case had been ruptured or overstrained, hæmorrhage would have subsequently ensued.

The first dog operated upon is now in the possession of Mr. George Woodside, No 831 Champa Street, and the calf is in the stock lot of Mr. Boyd, west of the Platte, near the Thirtieth Street bridge. Any one having the curiosity to see animals that have once been dead, and afterward scientifically restored to life, can do so by calling at these places.

A LETTER FROM MR. ARMITAGE.

To the Editor of the Scientific American:

Please find inclosed herein a relation of my assistant, Mr. J. L. Finch, in regard to some experiments instituted by myself in this city on revitalizing dead animals. The account was published in the Denver *News* five days ago. It is proper for me to add to this account that since then I have successfully restored life to a dog that had been dead *eighteen hours*—his death having been effected by blood-letting. After he became unconscious, he was treated similarly to the dog first mentioned in the article inclosed, except that the temperature of the room in which he lay was maintained at 40° Fah., to prevent any probable change of tissue taking place. This case was brought to a successful termination last night. The dog is doing well, has eaten some to-day, but seems somewhat weak.

The results of these experiments appear most momentous to me, and I am desirous of having them repeated by others, and my own work corroborated. I believe they will be of value to mankind, and in order to introduce them to more general attention I submit them for your consideration, or for such a publication of the facts as may seem proper.

G. A. ARMITAGE.

Denver, Col., January 22, 1885.

Medical Notes.

Oxide of Zinc in the Treatment of Wounds.—Socin (*Deutsche Med. Zeitung*) speaks highly of this substance as an antiseptic in surgical practice. For the irrigation of deep wounds he uses a one per cent mixture with water; superficial open wounds should be washed with a ten per cent mixture. Large raw surfaces, burns, contusions, etc., are dusted with the powder. As a permanent dressing, the writer recommends a paste composed of fifty parts, each, of water and oxide of zinc, and five parts of chloride of zinc. It forms a dry coating, beneath which healing takes place with unusual rapidity. Stress is laid on the fact that zinc is of little service in the case of a wound that is already septic.

Aseptic Silk for Sutures.—Partsch (*Ibid.*) recommends that ordinary silk be soaked for two days in a ten per cent solution of iodoform in ether, and then dried by wrapping it in blotting paper. The advantages are said to be that it can be kept for a long time without deteriorating, and that it does not cause suppuration when left in a wound. It is consequently useful in the operation for laceration of the cervix uteri.

Jaborandi in Erysipelas.—Dr. Sydney Thompson (*Therap. Gazette*; Edinburgh *Med. Jour.*) suggests the following formula: Fluid extract of jaborandi, 24 parts; laudanum and glycerine, each, 4 parts. This mixture is to be painted over the affected surfaces every four hours.

Oil of Peppermint in Burns.—Brame (cited in the *Lancet*) recommends this drug as an external application in cases of burns. The burned surface is moistened with water, and then painted over with the oil, the effect being to relieve the pain very quickly.

Verbena as a Sudorific.—Verbena hastata is recommended by Weber (*Ibid.*) as a valuable sudorific, when given in doses of half a drachm or a drachm of the fluid extract.

An Application for Painful Dentition.—According to the *American Journal of Pharmacy*, Hager recommends the following: Chloroform, 10 drops; tincture of Spanish crocus, half a drachm; honey, half an ounce; glycerine, 1 ounce. To be rubbed on the gums, to allay irritation.

Valoid of Coca is mentioned by the *Lancet* as a "new and reliable preparation," and is specially recommended for nervousness and sleeplessness from mental causes.

Cold in the Treatment of Sciatica.—Debove (*Prog. Med.*) recommends the direct application of cold along the course of the sciatic nerve, and especially over the painful points, by means of a spray of chloride of methyl. He reports several successful cases. The atomization is continued until the patient complains of a burning pain over the seat of the application.—*N. Y. Med. Jour.*

The Novorossick Railway.

The Russian Minister of Railways has completed his preparations for the Novorossick line, the first sod of which will be cut, it is expected, in a few weeks' time. The railway is, says *Engineering*, of a highly important character, and, from the rocky nature of the country traversed, will afford plenty of opportunities for a display of skillful engineering. Novorossick is one of the best ports on the Caucasus coast, if not indeed the best. In importance it ranks after Batoum and Poti. These two ports serve as outlets for the region south of the Caucasus ridge, which region—Transcaucasia—is traversed by a railway passing from the Caspian to the Black Sea, and uniting Baku with Poti and Batoum. The line proposed will ultimately unite the Caspian and the Black Sea north of the Caucasus ridge. The Caspian terminus will be Petrovsk, and the Black Sea one Novorossick.

At present the whole of the vast fertile region lying north of the Caucasus ridge is devoid of good outlets. The Rostoff-Vladikavkay Railway runs through the middle of it, from the Caucasus to the mouth of the Don, but it throws out no branches right or left. The consequence is that the produce of a region larger than the United Kingdom flows into a shallow port at the mouth of a river which is frozen over three or four months every year. The railway now sanctioned will put an end to this condition of things. Starting from a point about midway between Vladikavkay and Rostoff, it will proceed straight to the Black Sea, where it will find a terminus in Novorossick, which is never frozen over, and possesses a capacious bay fifteen miles in circumference, capable of accommodating the largest possible amount of shipping. Thus the outlet will be one that will meet in every respect the requirements of a region remarkably rich in corn and oil. The Novorossick Railway will be 172½ miles long, and will cost, with £150,000 for improving the port, £1,400,000 sterling. The gauge will be 5 feet, the line will be single, and the rails of steel, manufactured in Russia.

The Koubon region, which it will traverse close to the coast, is one of the most inaccessible parts of the Caucasus, being so mountainous and embedded in forests that it is traversed by only one or two military roads, constructed during the wars with the Circassians at an immense cost. The engineers will thus have many difficulties to overcome, although they anticipate completing the line in a couple of years. When it is finished, perhaps even before then, a branch will be commenced on the opposite of the Rostoff-Vladikavkay Railway, and run to Petrovsk, on the Caspian. This will be a little longer, but it will be easier than the Novorossick line, and will be completed in about the same space of time. Thus, in about four years Russia will have a new railway from the Caspian to the Black Sea, to the north of the Caucasus, and being linked with the European system, people will be able to go from Calais to the Caspian all the way by railway. These considerations give special importance to the new undertaking, but there is another which will interest Europe still more. The Novorossick Railway will traverse the Black Sea petroleum region, and open up a country known to be as rich in oil as America, and which on examination may prove to be still richer. Already there is a refinery at Novorossick with a pipe line 60 miles long running to the wells in the interior, so that a start has been made with an industry which would have long ago assumed larger proportions but for the generally inaccessible character of the Koubon region.

A Novel Temperance Society.

On the night of December 31, 1883, three young men sat around a tavern fire in Georgetown, a little village in Connecticut. They were intoxicated, and were watching the old year out. As the clock struck twelve, one of the young men said: "Boys, the new year is here; now let's swear off, and form a temperance society." The others, in a spirit of fun, agreed. The articles of association were then and there drawn up. They were similar to the rules of other temperance organizations, with one exception. The clause containing the pledge had the following penalty attached: "And any one of us who shall drink any intoxicating liquor, for any purpose whatsoever, between now and midnight of December 31, 1884, shall be tarred and feathered."

This clause becoming known, gained the club the name of "The Tar and Feather Temperance Society." Meetings of the society of three were frequently held. Gradually applications for membership began to pour in, and before six months had passed the society numbered thirty members. The year of abstinence expired on new year's eve, and a grand ball was given by the society, to which a large number of the best people of the place were invited. The hall was filled. At midnight the president announced that the pledge had expired. By a unanimous vote it was renewed for another year, and some twenty names were added to the roll. The peculiar penalty proves an attractive advertisement, and the matter is the talk of the neighborhood. Nearly every resident wears the society's badge. The badge is a blue ribbon, with a lump of tar filled with chicken feathers attached.

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