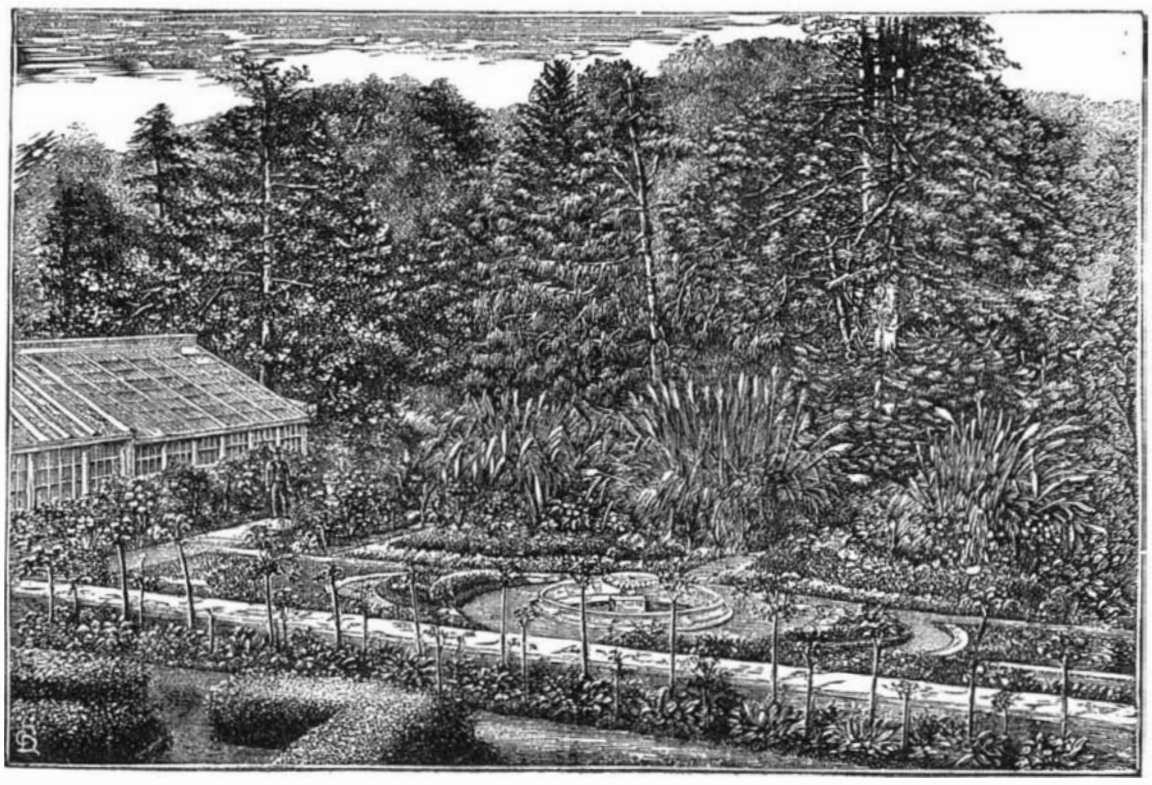
ENGLISH GARDENS.

Carclew House, Cornwall, England, the residence of Colonel Tremayne, has a high renown among the horticultural establishments of the West of England, a district enjoying a very mild climate, even for that country, and peopled by a race who are, like the Scotch, gardeners by instinct and inherited disposition. "In this favored spot," says a recent visitor, "rhododendrons of all kinds seem quite at home, and the same may be said of the camellia and Indian azalea, noble examples of which were every now and then to be met with. A Loquat tree, *eriobotrya japonica*, was 10 feet high, as much through, and in the most robust health. The same may be said of *escallonia pterocladon*, quite 15 feet high, having white flowers, and more tree-like in character than the other species. The singular *colletia Bictoniensis* was also here in the shape of a dense bush quite 7 feet in diameter; and there were specimens of *fabiana imbricata* quite as large. I noticed a fine mass of *hedychum flavum* or *flavescens*, which, to all appearance, had not been disturbed for many years, and was flowering most abundantly. I noticed a rhododendron of the true *arboreum* section, or one very near akin to it, with a clear bole more than 6 feet high without a branch, and stout enough to form a gate post for a carriage road. The general character of the place must be extremely rich at the time these shrubs are in flower; and when it is understood that some of them flower in winter, accompanied by camellias, the effect must be gorgeous. Intermixed with these rhododendrons, etc., were magnolias of the deciduous class, assuming the character of timber trees, and there was no lack of flowers, on open standard trees, of *m. grandiflora*."

Although these various semi-tropical shrubs grow freely in the open air, Nature is liberally supplemented by every improved appliance in the way of hot and forcing houses. Orchids of the tropics and all other exotics are grown in great profusion; and the vineries and orchard houses are of great extent, and are renowned for the handsome fruit of nearly all kinds grown in them.

We give herewith a view, showing one portion of the gardens, with the fountain and basin in the center. The garden is geometrical, consisting of twelve beds with borders at the sides, etc., on gravel, the beds edged with box. The four beds through the center in line with the basin are carpet-bedded; four others, flanking the basin, are all planted alike with geraniums, calceolarias, perilla, and lobelia. Outside these, and, as it were, surrounding them, are four other large beds, which are planted with herbaceous plants, etc., and a row of dahlias down the center. In front of the hot-house can be seen a mass of belladonna lily, myrtle bushes, etc. Besides the pampas grasses, in the angles of four herbaceous beds stand *colletia Bictoniensis* and *hypericum oblongifolium*. In the fountain basin are *limnocharis Humboldtii* and *aponageton distachyon*. The terrace above is also a geometrical garden of twenty-seven beds, with borders, on gravel, with box edging, and planted miscellaneously with annuals, violas, etc.; the violas, with a bed of *lobelia cardinalis* (St. Clair), being a great success. Behind the pampas grass, to the right, can be seen the spreading head of *linus patula*.

If any of our readers journey towards the Land's End in the course of this summer, we recommend them to visit these gardens, which have been under the highest cultivation for many centuries past.



GARDEN AT CARCLEW, ENGLAND.

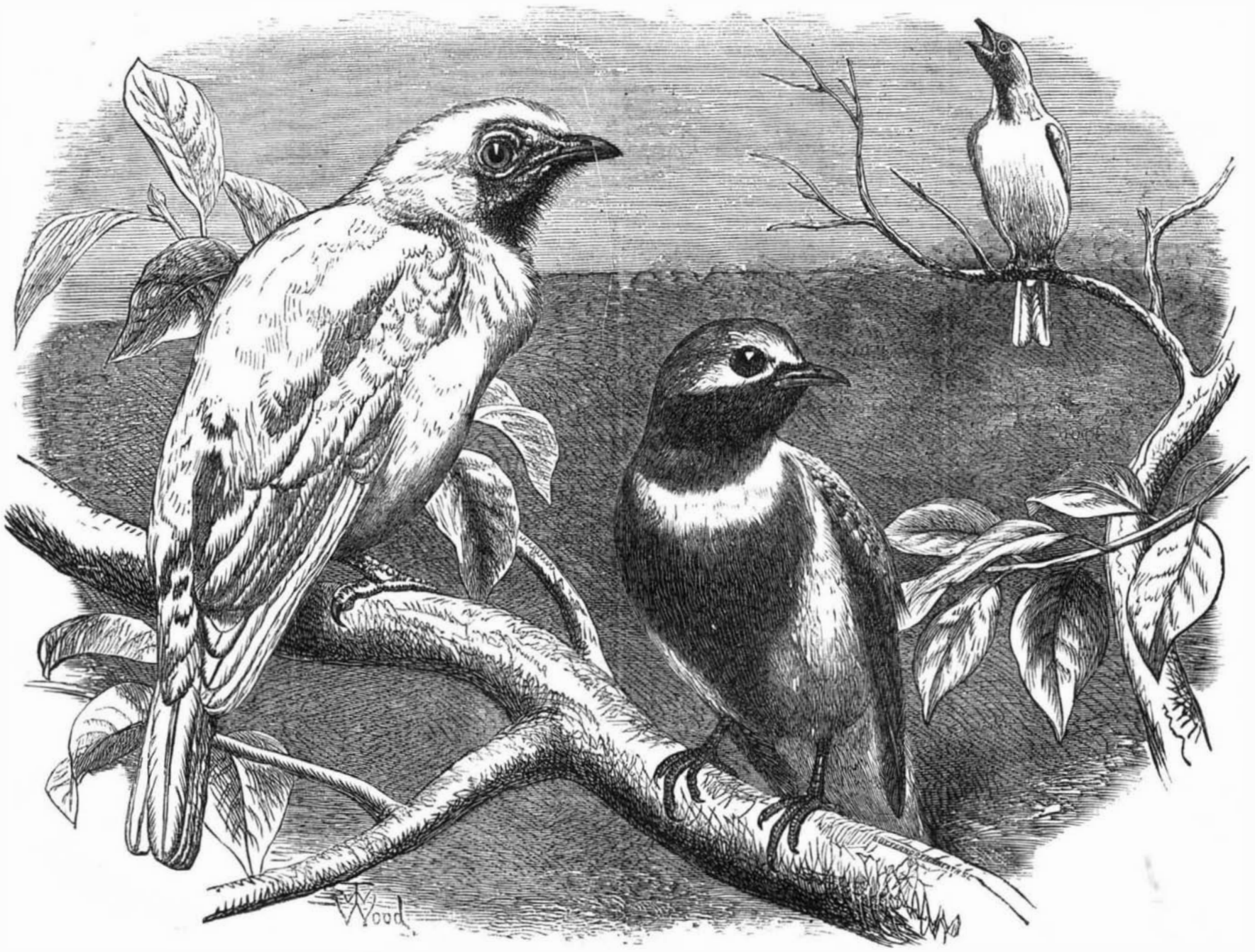
Tough Glass.

An inventor, Mr. Charles Pieper, has devised a way of toughening glass, which the German papers pronounce superior to that of M. de la Bastie, recently described in these columns. The Pieper glass is fully as strong as that of the latter inventor, and its appearance is much purer and clearer. Extended experiments upon it have been begun in Germany. The Association of German Glass Makers have already entered into negotiations with Mr. Pieper for the use of his invention, suspending similar dealings with M. de la Bastie, on account of the immense price asked by him, over eight million dollars.

THE BIRDS OF BRAZIL.

Our engraving exhibits two remarkable ornithological specimens from Brazil, domesticated in the gardens of the Royal Zoölogical Society, Regent's Park, London.

The first is the bell bird, the celebrated *campanero* of the Spaniards, called *dara* by the Indians. He is about the size of the jay. His plumage is white as snow. On his



THE BRAZILIAN BELL BIRD AND THE BANDED COTINGA.

forehead rises a spiral tube, nearly three inches long. It is jet black, dotted all over with small white feathers. It has a communication with the palate, and when filled with air looks like a spire; when empty, it becomes pendulous. His note is loud and clear, like the sound of a bell, and may be heard at the distance of three miles. In the midst of Brazil's extensive wilds, almost out of gun reach, you will see the *campanero*. No sound or song from any of the winged inhabitants of the forest, not even the clearly pronounced "Whip-poor-Will" from the goatsucker, causes such astonishment as the toll of the *campanero*.

With many of the feathered race he pays the common tribute of a morning and evening song; and even when the meridian sun has shut in silence the mouths of almost the whole of animated nature, the *campanero* still cheers the forest. You hear his toll, and then a pause for a minute, then another toll, and then a pause again, and then a toll, and again a pause. Then he is silent for six or eight minutes, and then another toll, and so on. "Actæon would stop in the mid-chase," says Waterton, "Maria would defer her evening song, and Orpheus himself would drop his lute to listen to him, so sweet, so novel, and so romantic is the toll of the pretty snow-white *campanero*. He is never seen to feed with the other *cotingas*, nor is it known in what part of Guiana he makes his nest."

The second specimen is a relative of the bell bird, and is known to ornithologists as the *cotinga cincta*. Of these, in their natural state, even less is known than of the bell birds. The *cotingas* are distinguished by the brilliancy of the coloration of the males. In the species at present under notice, the under parts are of a deep plum color, while the upper parts, with the band or cinctus across the breast, are of a magnificent ultramarine blue. In size this *cotinga* equals a blackbird. Their food consists of fruits, which their wide gape enables them to swallow with ease. Like their allies the bell birds, they are solitary in their habits, keeping to the topmost branches of trees, and generally residing in the dense forest, though at times they approach the cultivated grounds in search of their food.

Useful Recipes for the Shop, the Household, and the Farm.

According to Niedling, a beautiful orange-yellow tone, much admired in a chest at the Vienna Exhibition, may be imparted to oak wood by rubbing it in a warm room with a certain mixture until it acquires a dull polish, and then coating it, after an hour, with thin polish, and repeating the coating of polish to improve the depth and brilliancy of the tone. The ingredients for the rubbing mixture are about 3 ozs. tallow, ¾ oz. wax, and 1 pint turpentine, mixed by heating together and stirring.

The following is said to be all there is of the cook's secret for producing those world-renowned potatoes served at Moon's Lake House, Saratoga Springs, every summer: Peel good-sized potatoes, and slice them as evenly as possible; drop them into ice water. Have a kettle of lard, as for fried cakes, and very hot. Put a few at a time into a towel, shake them about to dry them, and then drop into the hot lard. Stir them occasionally; and when of a light brown, take them out with a skimmer. If properly done, they will not be at all greasy, but crisp without, and mealy within.

A French journal says that, of the score of fireproof compositions that have been brought forward within as many years past, there is scarcely one that possesses superior or even equal adaptation, to the purpose, to the following: Dissolve, in cold water, as much pearlash as it is capable of holding in solution, and wash or daub with it all the boards, wainscoting, timber, etc.; then, diluting the same liquid with a little water, add to it such a portion of fine yellow clay as will make the mixture of the consistence of common paint, and then stir in a small quantity of paperhangers' flour paste to combine both the other substances. Give three coats of this mixture, and, when dry, apply the following composition: Put into a pot equal quantities of finely pulverized iron filings, brickdust, and ashes, pour over them size or glue water, set the whole near a fire, and, when warm, stir them well together. With this liquid composition, or size, give one coat, and, on its getting dry, give a second coat. It resists fire for five hours, and prevents the wood from ever bursting into flames; that is, it so resists the ravages of fire as, at most, only to be reduced to coals or embers, without spreading the conflagration by additional flames. It is found that a quantity equal to twenty pounds of finely sifted yellow clay, a pound and a half of flour for making the paste, and one pound of pearlash is sufficient to prepare a square rood of deal boards.

Mr. James Hinton, in his "Physiology," affirms that the passage of the ear does not require cleaning by us. Nature undertakes that task, and in the healthy state fulfils it perfectly. Her means for cleansing the ear is the wax, which dries up into thin scales, and peels off and falls away imperceptibly. In health the passage of the ear is never dirty, but an attempt to clean it will infallibly make it so. Washing the ear out with soap and water is bad; it keeps the wax moist when it ought to become dry and scaly, and makes it absorb dust. But the most hurtful thing is the introduction of the corner of a towel screwed up, and twisted around. This proceeding irritates the passage and presses down the wax and flakes of skin upon the membrane of the tympanum, producing pain and inflammation and deafness. Washing should only extend to the outer surface, as far as the finger can reach.

An ink composed of copper 1 part, dissolved in 10 parts nitric acid, 10 parts water being afterwards added, is useful for marking on tin or znic plant labels.

A simple mode of keeping butter in warm weather is to set over the dish containing it a large flower pot or unglazed earthenware crock, inverted. Wrap a wet cloth around the covering vessel, and place the whole where there is a draft of air.

Rats detest chloride of lime and coal tar.

White horn buttons may be made to imitate mother of-pearl by being boiled in a saturated solution of sugar of lead and then laid in very dilute hydrochloric acid.

The following is a simple way of obtaining copies of writing without the use of a copying press: Mix white sugar with the ink, 1½ drams sugar to 1 oz ink. Use this with an ordinary pen, and place over the writing a moistened sheet of unsized paper. Lay both leaves between two layers of carpet; put the whole under a piece of board large enough to cover. Then stand on the board for a few seconds. An excellent impression will be found on the copying paper.

To extract rust from steel, immerse the article to be cleaned in a solution of ½ oz. cyanide of potassium to a wine glass full of water until the dirt and rust disappear. Then clean by means of a tooth brush with a paste composed of cyanide of potassium, Castile soap, whitening, and water.

Awnings can be rendered waterproof by plunging the fabric into a solution containg 20 per cent of soap, and afterwards into another solution containing the same percentage of sulphate of copper. Wash, and the operation is finished.

The best pine wood evaporates 5 lbs. of water per lb. wood consumed in a steam boiler furnace. One cord of wood can be consumed per hour on 60 square feet of grate. One pound carbon burnt to carbonic acid requires the oxygen of 153 cubic feet of atmospheric air.

Iron filings in a weak solution of sal ammoniac, mixed with Portland cement, are said to double the strength of the latter

The following compounds are useful for soldering or tinning: Tin, 1 part muriatic acid with as much zinc as it will dissolve; add 2 parts water and some sal ammoniac. Brass and copper, 1 lb. muriatic acid, 4 ozs. zinc, 5 ozs. sal ammoniac. Zinc, 1 lb. muriatic acid, 2 ozs. sal ammoniac with all the zinc it will dissolve, and 3 pints of water. Iron, 1 lb. muriatic acid, 6 ozs. sperm tallow, 4 ozs. sal ammoniac. Gold and silver, 1 lb. muriatic acid, 8 ozs. sperm tallow, and 8 ozs. sal ammoniac.

For silvering metals, 10 parts nitrate of silver, 10 parts common salt, and 30 parts cream of tartar may be used. Moisten the powder with water when ready to apply.

Hardening Glass.

This is a process that has been patented by Mr. Macintosh, of Westminster, a civil engineer who has devoted much time and attention to the hardening of iron, steel, and alloys. Starting on the broad ground that, the lower the degree of temperature of the liquid in which certain heated bodies were plunged, the harder such bodies became, Mr. Macintosh has found that glass, graphite, uncrystallized carbon, slag, and other analogous substances may be rendered exceedingly hard by means which are usually indicated for metals. Colored glass may, by this treatment, be rendered so hard as to be effectively used as a substitute for gems, and, what is curious, may be pulverized and used in the same way as diamond dust or emery powder.

In hardening the substance, the method pursued by the patentee is to place a small quantity of fused or nearly fused clear or colored glass in iron or other molds to shape the glass, and the substance is taken out of the molds and placed in platinum molds, and fused or nearly fused, and suddenly deprived of its caloric by frigorific mixtures of iced water and salt, or any of the freezing compounds that produce extreme cold; the sum and substance of which is that the glass is heated to a very high degree of temperature and then rapidly cooled in a very frigid fluid. A startling statement is made by Mr. Macintosh when he asserts that, when the component parts of gems are treated by the above process, he is enabled to produce thereby fictitious gems even harder than real diamonds.

Velocity of Light.

Professor Cornu, of the *Ecole Polytechnique*, Paris, has put into successful use a new instrument for measuring the velocity of light between two stations, in which an electrical registering apparatus is used, giving, it is believed, more accurate measurements than the well known toothed wheel arrangement of Fizeau. Foucault fixed the velocity of light, by his instrument, at 185,157 miles per second Professor Cornu, by his new instrument, fixes the velocity of light at 186,660 miles per second, or 1,503 miles faster per second than Foucault.

An Engineer on Boilers.

"Then there's the boiler; that takes a heap of watching all the time. We have steam enough ordinarily, might say, when we don't want it; but there are times when we can't get it to save our souls; no more than enough to get along with. She fires hard. I never saw a boat yet that had too much boiler; nor no other man. Yet tell the owners that, or the makers of the engines, and they will say: 'Oh, big boilers take up too much room;' and then they go and put in a little kettle with not enough fire surface in it, and burn coal enough in a year to pay for a decent boiler. The best made boilers in the world will bear a heap of watching. You know the engine pumps water into them all the while to keep up the supply. Well, the pumps will work all right for months at a time; first thing you know of, sometimes when you are in trouble about other things, the pumps will stop working, and you can't get a drop of water in her to save you, then you have got to look sharp. What makes it act so? What makes everything go wrong in this world? That's what I want to know; when it's once set right, it ought to go right, but it don't. Sometimes the check valves get held up, and the water don't go down in the boiler at all, but just surges back and forth from the pump pressure and the boiler pressure alternately; sometimes dirt gets under them, chips and things; then, again, joints will blow out in the band hole plates, and make a heap of trouble. No matter how trifling a thing is to us, it is sure to make a disturbance with the passengers, and that's what we have to avoid as much as possible, for they are easily scared."—*New York Sun.*

The Coke-Manganese Galvanic Cell.

The well-known Leclanché's cell is now in use for many purposes, giving a very constant current, but which, however, is much decreased by the resistance of the tar covering the top of the porous cell, and by the decomposition of the manganese dioxide, which is transformed during the action of the cell into oxide; the latter oxide closes the pores of the cell. Sergius Kern's cell is a modification of Leclanché's one, and the experiments proved it to act very constantly.

Two parts of cleanly washed coke, and one part of manganese dioxide in the state of powder, are well mixed together with a small quantity of water acidulated with some drops of nitric acid; the mixture then is strongly pressed into brown paper cartridges 5 inches high and 1¼ inches diameter. The resulting coke-manganese cylinders are dried in a warm place, but not over a fire, because the heat, as it is known, decomposes the manganese dioxide.

The dried cylinders are placed in glass jars containing concentrated solution of ammonium chloride, and surrounded with zinc plates curved in the usual manner. By this arrangement the use of porous cells is avoided, and a battery of such elements acts more constantly; besides this, the construction of it is cheaper. Instead of having glass jars, Kern uses wooden boxes, the size of the glass jars; the internal parts of the boxes are covered with the following mixture, melted in an iron cup:—2 parts of wax, 10 parts of common resin (colophony), 2 parts of red lead, and ⅛ part of gypsum.

The zinc of the element is the negative pole; the coke, the positive pole.

Recent American and Foreign Patents.

Improved Steam Boiler Furnace.

Walter Dawson and James Hughes, Scranton, Pa.—This invention consists in the formation of the side sheets of the furnace to protect the corner joints and flanges from the intense heat of the fire. In ordinary boilers, the side sheets, which lap on to the flanges of the front and tube sheets, are straight sheets, which leave the flanges and rivets exposed to the full heat of the fire. The furnace consequently fails at the corners from the heat and corrosion caused by the increased thickness of iron at those points. The object of the improvement is to prevent this, and to make the corner joints as durable as any portion of the furnace; and for this purpose the side sheets bulge inward throughout the entire width, where the central portion of the sheet is on the same plane as the joints, with bulges adjacent to the flanges to protect the joints. By this means the joints are protected from the intense heat of the fire, and are preserved and rendered as durable as any part of the furnace.

Improved Mechanical Movement.

James R. Devor, Goshen, Ind.—This invention relates to a new mechanical device, by means of which belt pulleys, cogged gearing, and other mechanisms may be made to run on shafts which are not parallel to each other. Balls are fastened tightly on the shafts. A portion of the ball sockets consists in two disks, having each a broad slot through which the shaft passes. These slots allow the shaft to turn in either direction. The inside pulleys form the box, and are made concave to fit the ball, having flanges which lap on the disks. The pulley is carried or revolved by the pins through the pulley, and the slots in the ball on opposite sides. Attached to the disks on each or opposite sides of the ball are yokes connected together by a rod, which support the belt guide. The spaces inside the disks are for allowing the box lateral play on the ball.

Improved Construction of Watch Movements.

James H. Flynt, Duluth, Minn.—This is a watch movement in which motion is communicated from the mainspring barrel to the escapement wheel through a single pinion and wheel, said wheel being of nearly the circumference of the pillar plate, and arranged between the face and the pillar plate.

Improved Milk Cooler.

Henry S. Murray, Andes, N. Y.—The outlet tube consists of an annular socket with a shoulder, which is soldered around a bottom perforation of the milk pan, and seated on a circumferential collar of an exit tube of the tank. A top flange of the exit tube extends into the socket, forming, in connection with the shoulder of the socket, the seat for the circumferential flange of a short tube, which screws into the threaded part of the exit tube so as to bind the socket, exit tube, and connecting tube firmly together. Intermediate packing rings produce the water and milk tight connection of the pan and tank, so that the milk may be drawn off without leaking, or mixing with water from the tank. A screw cap is screwed into the binding tube of the faucet, for closing the same, in the same manner as in the water exit tube, and retained until it is necessary to draw off the milk, in which case the screw cap or plug is withdrawn.

Improved Seed Sower.

John W. Talley, Paxton, Ill., assignor to himself and Thomas W. Buell, of same place.—The invention consists of a vertical lever for working the slide, which is moved in one direction by a vertical lever at the end of the roller, so as to be operated by tappets thereon. It is connected to the slide lever by a rope going around a guide pulley at one corner of the machine. In the other direction the slide lever is worked by a spring, which is forced as the tappets escape from the lever. A stop cord is connected to the tappet lever to prevent the spring from throwing it and the slide lever too far. The machine is designed for sowing grass, flax, and other small seeds, and will generally be used with a roller for smoothing the ground at the same time; but it may be used with wheels.

Improved Milking Tube.

Sylvester A. Smith, Muscatine county, Iowa.—This invention consists in a tube provided with a grooved head in which is a slide valve, while the body is tapered to an open end that enters the teat and udder of the cow.