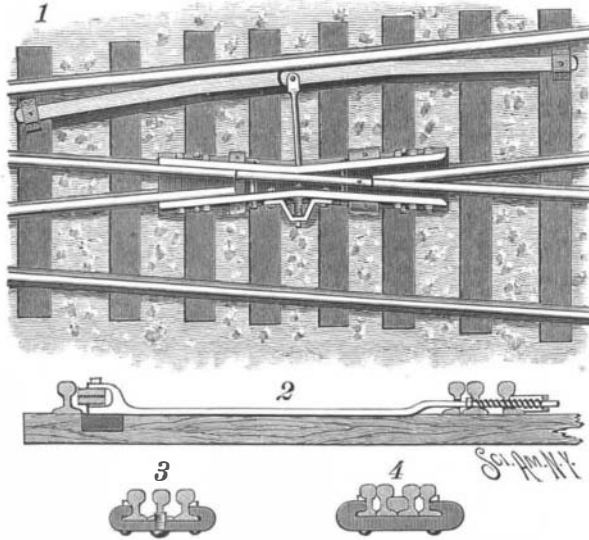


**AN IMPROVED SWING RAIL RAILROAD FROG.**

The frog shown in the illustration is designed to dispense with the use of a base plate, but permits of the passage of locomotive and cars in either direction of travel from a side track to an intersected main track, automatically returning the swing rail of the frog to alignment with near rails of the main track after the cars have passed from one intersecting track to the other. The improvement has been patented by Mr. David Horrie, of Kakauna, Wis. Fig. 1 shows the improvement at the intersection of a side track with the

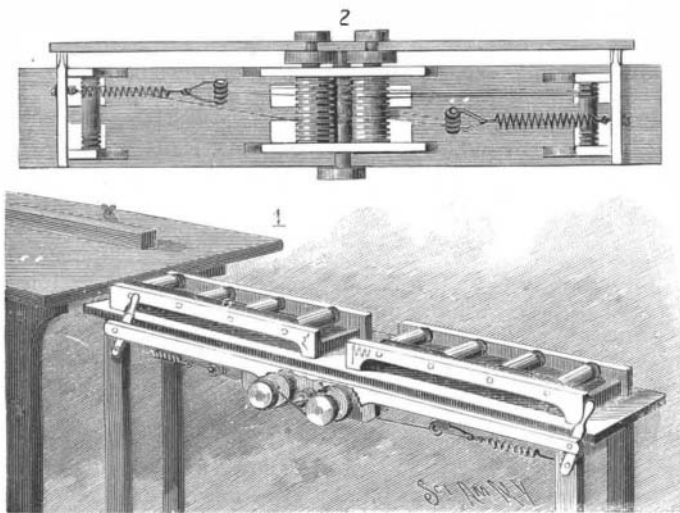


**HORRIE'S RAILROAD FROG.**

main track, the latter being continuous, Fig. 2 being a transverse sectional view on the line of the frog, and Figs. 3 and 4 being other cross sections. The frog consists of two inwardly bent carrier rails, with two plates clipped on their base flanges, and a swing rail pivoted near one end on one plate and slidable on the other plate. There are two transverse guide bolts fast in the carrier rails and loose in the swing rail, and a device to vibrate the latter, comprising tripping bars and a shifting rod, there being a bracket frame on one carrier rail and a spiral spring pressing the frame and spring rail. For further particulars relative to this improvement address the Northwestern Horrie Patent Frog Co., Antigo, Wis.

**AN IMPROVED MECHANICAL CARRIER.**

The mechanism shown in the illustration is designed to be of very simple and compact construction, and especially adapted for use in sawmills, or where boards or similar material may be thrown upon the rolls for transportation. The improvement has been patented by Mr. Charles P. Hogue, of Portland, Oregon. Fig. 1 shows the carrier in perspective, and Fig. 2 is a bottom plan view. On the bed, in suitable supporting frames, are transversely journaled rolls, whose upper surfaces project slightly above the tops of the frames, the rolls being grooved to receive a driving belt which connects with them all. On opposite sides are tension rolls or pulleys journaled in forks carried by springs, which serve to keep the belt taut. The rolls are all directly driven and turned in the same direction, and their direction may be instantly changed by moving a shift rail. The belt grooves are so arranged in the rolls that the rolls may be conveniently cased in and protected, and the driving drums connected with the rolls



**HOGUE'S CARRIER.**

may be used alternately as drivers and idlers, a single belt connecting the drums and every roll.

**American Search Lights in the East.**

An officer of the Japanese navy has written a letter to a friend in this country, in which he speaks highly of the efficiency of several American electric search lights used in the fleet to which he is attached. These lights stood the test of actual service better than the English and German apparatus, which will be doubtless condemned by a board of survey. He also states that the best maps of the Yellow Sea and Corea

are from the United States Hydrographic Office in Washington. These maps and charts are compiled with the latest data, and the principal roads in Corea are clearly indicated.

**Voting by Machinery.**

The new amended Constitution of New York State makes it possible, says the New York Sun, to dispense with the ballot system of voting altogether and to substitute in its stead mechanical devices for recording the vote, if the Legislature shall so direct.

The amendment permitting the use of voting machines was inserted by the Constitutional Convention, which had in mind the successful trial of such a voting machine at several town and village elections in the western part of the State.

Mr. Jacob H. Myers is the inventor of this new device for registering votes, and has been trying for many years to get it used at elections. As the Constitution stood in the way, requiring as it did that elections be by ballot, it was found necessary to amend the fundamental law of the State before the machine could be used at all elections. This has now been done, and a description of Mr. Myers' mechanical device, which will become a part of the voting system of the State if the Legislature shall so direct, may be of interest to the voting citizens who may be called upon to use it.

To all outward appearance the machine is nothing more than a sheet iron box five feet square and seven feet high. It has two doors in the front, one for the entrance of the voter and the other for his exit after he has registered a freeman's will. On entering the box the voter finds himself fully inclosed from prying eyes, for there is a roof over the booth, which is lighted from within. At the back of the booth the voter sees several rows of knobs in parallel perpendicular rows occupying almost the entire back wall. Each of these rows is reserved to the candidates of a particular party who are to be voted for. The party designation will be found at the top of each row of knobs, and opposite each knob will be found the name of the candidate to be voted for. If the voter cannot read, he can recognize his party candidates by the distinctive color of the paper on which the names are printed. Provision is made for the strict party man who wants to vote the straight ticket, which is the easiest thing to do in the Myers voting machine, as it is by any mode of voting yet devised. By pulling a lever at the top of a column of knobs one vote is cast for every candidate of the party. At the same time all the other levers and the knobs are locked, and if the voter should remain in the box all day he couldn't cast another vote.

The machine would be the delight of the Mugwump. He could pick out individual candidates nominated by all parties and split his ticket to his heart's content. In voting for individual candidates the pressing in of the knob opposite the name of the candidate (for mayor, for instance) would lock the knobs of every other candidate for mayor, so that there would be no danger of anybody's voting twice for mayor.

When the voter leaves the booth by the "exit" door all of the levers and knobs are released by the action of the door, and the booth is ready for another voter. There has been some talk to the effect that the voter might be confused by a multiplicity of candidates, but the provision of the Constitution separating State and national elections from those for municipal officers has disposed of that adverse argument.

Outside the booth the voter will find a chart representing the position of the knobs and their relation to the candidates, which will assist him very materially in recording his desires when he gets inside. Similar charts can be used by the political poll workers in instructing their friends. Only a blind man would be incapable of voting with the machine, but he might have assistance, the law so providing.

In an actual village election, where it is true there were only a few candidates in the field, more than one thousand votes have been registered by a single machine, and the inventor claims for it a capacity which would permit of greatly reducing the number of election districts in this city, were it used here, thus greatly lessening the expense of elections.

So much for the voter's part. The machine does the rest. Back of those long rows of levers and knobs is a shallow box fitted into the back of the booth, which contains the counting machinery, which is worked when the levers are pulled or the knobs pushed by the voters. This automatic counting arrangement is similar to that of the automatic cash registers; or a better comparison, perhaps, would be the counting machines which register the number of newspapers run off by a printing press, or the fare registers on a street car.

This counting machinery is protected by a door which cannot be opened except by the inspectors of

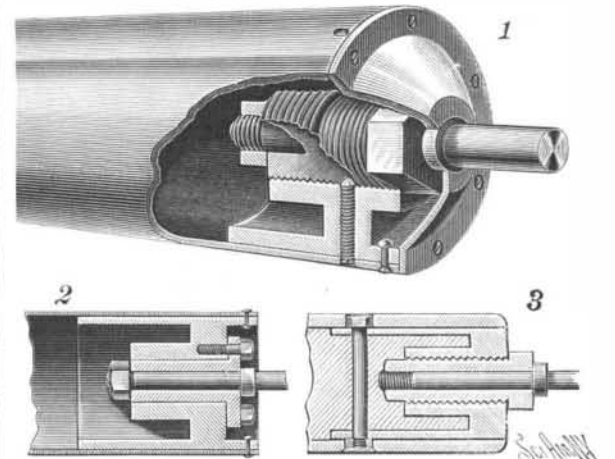
election after the voting is done, and then the canvass of the vote is practically completed. The exact vote cast for every candidate will be indicated by the machines. Should the tally of voters who entered the booth kept by the election inspectors and poll clerks not agree with the machine, the conclusion would be that fallible man was mistaken, and that the machine's record was accurate.

Inventor Myers says that two votes a minute can be cast by the use of his machine. Provision is made for independent candidates for single offices, who have been properly nominated, and each will have his separate knob. Not to deprive the discontented voter of his right to vote for whom he pleases, whether nominated or not, provision will be made for the reception of such ballots and their deposit in a box outside of the booth.

As to the cost of the machines, they are estimated to be worth \$250 apiece. This city would certainly need 1,000, if not more. On the other hand, the saving through their use would be more than \$100,000 a year, as indicated by the estimate of the Bureau of Elections of the cost of elections under the present system. In the first place, ballot and poll clerks might be done away with. They are to be paid \$57,600 this year. A doorkeeper for each machine might be required in their place, however. The printing of the ballots this year cost \$40,000, and there was \$5,000 expended in fitting up polling places, which would not be needed with the machines. Added to this would be the saving consequent on a very considerable diminution in the number of polling places, which it is believed would be rendered possible by the introduction of the voting machine.

**AN IMPROVED JOURNAL HEAD FOR ROLLS.**

This is an improvement in rolls, cylinders, etc., primarily designed to facilitate paper making, providing therefor a journal head of simple and durable construction, easily applied, and permitting of convenient



**MCCORKINDALE'S JOURNAL HEAD FOR ROLLS.**

ly removing and replacing the spindle in case of wear or breakage, without removing the roll from the machine. The improvement has been patented by Mr. Duncan L. McCorkindale, of Childs, Md. Fig. 1 shows the application of the improvement, with the cylinder partly broken away to show its interior supports, Figs. 2 and 3 being modified forms of journal head bearings. As shown in Fig. 1, a head riveted inside the cylinder end has a hub with an interior screw thread in which screws a bushing with polygonal head, the journal spindle being carried by the bushing. The rear end of the journal spindle is screw-threaded, and receives a nut to fasten the spindle in place in the bushing. The spindle is fastened in place in the hub of the head by a set screw. It will be seen that with either form of the improvement the journal head may be readily applied or removed without removing the roll from the machine.

**Extensive Trolley System.**

A franchise for the construction of an electric railroad in the town of Milton and the village of Ballston Spa, N. Y., has been awarded to the Boston Electrical Construction Company. Work will be begun at once, so that the road will be in running order August 1, 1895. If the ideas of the company are finally carried out, there will be a belt line running from Ballston Spa to Rock City Falls, thence to Jamesville, easterly to Greenfield Center and Saratoga Springs, and thence south to Ballston Spa.

The road will be of the standard gauge and will run ordinary freight cars direct from the large paper mills at Rock City Falls to New York City without breaking bulk. It will also have passenger equipments. The new road, its projectors claim, will be the beginning of a system of electric roads connecting Troy, Albany, Schenectady, Amsterdam, Broadalbin, Johnstown, Gloversville, Rock City Falls, Saratoga, Ballston, Mechanicsville, and possibly other cities or villages.

**The Care of Epileptics.**

In connection with St. Clement's Hospital for Epileptics, Twentieth and Cherry Streets, Philadelphia, the Ledger says, the board of managers are at present taking active steps toward providing a farm for their patients, a plan which has been successfully tried abroad and in many States of this country. One of the most necessary conditions for the successful treatment of epileptic patients is the provision of occupation and interest for them, and this condition is by all odds best brought about by the outdoor life and exercise of the farm.

With a farm in connection with the hospital, the hospital itself would act mainly as a receiving ward for the farm. The patients would be treated at the hospital, and, if their recovery were possible in a short time, they could remain there. But the great majority of cases are only improved by long treatment, and for these the farm will be an exceedingly necessary factor.

Toward this plan \$15,000 has been promised by a prominent philanthropist, and farms have been viewed in the neighborhood of the city with the intention of purchasing. Another prominent citizen has promised, on condition of the purchase, \$5,000 toward the erection of suitable buildings.

Just now, however, the plans of the board of managers have been slightly retarded by the death of one of the benefactors of the institution, but it is hoped that the work will speedily go on.

Contrary to the general idea, in one-third of the cases of epilepsy the patient is in possession of his full mental power. It is cited as proof of this fact that Napoleon, Cæsar and Petrarch were afflicted with this disease. A great many of these patients are capable of earning their own living, were it not for the fact that the disease impresses every one as being a horrible affliction. When left to brood over his condition, the epileptic is often seized with melancholia, and he is driven to the hospitals for the insane, where he becomes insane from his surroundings.

Another point which determined the field for St. Clement's work was the fact that an epileptic, so long as he remains at home, is a constant burden and charge to the relatives upon whom he is dependent. In many cases the relatives are so hampered that their business is interfered with, so that in relieving the burden the hospital would not only alleviate the suffering of one person, as is the case with ordinary patients, but it would also relieve the family of great care and responsibility.

For such reasons as these the Epileptic Hospital was founded, and it was the first institution of the kind in the country.

During the two years that the hospital has been open 51 patients have been admitted. Two of these have been absolutely cured, one of whom had from 20 to 30 attacks a day and the other two or three. These two have had no evidence of the disease for more than a year. All the rest have been decidedly improved, with the exception of three who died from intercurrent troubles.

Although the hospital was the first to take up the work, it has fallen much behind of late, because of the lack of proper facilities, the most important of which is the farm. In New York, Ohio and Maryland institutions of this kind have been provided with this necessary outfit, and Virginia and other States are taking steps in this direction. Europe is far in advance of this country in the care of these patients. In Germany, Holland, France and England colony farms have been established for these people. In Germany they have a regular town, which was started by a minister. Schools, churches and the departments of the town government are conducted by the epileptics, who are happy in their occupation and in being away from the observation of those not similarly afflicted.

On the proposed farm the character of the work for the men will be light trucking, gardening, the care of the buildings, the making of brushes, etc., and in fact the manufacture of any articles where dangerous machinery is not used. For the women there will be the duties of housekeeping, needlework, and the making of fancy articles. The patients will thus in a measure become self-supporting.

Many can hold subordinate positions about the farm, making them recognize their own importance, and preventing lapses to the despondent moods which are so dangerous.

**Academy of Natural Sciences, Philadelphia.**

At the last meeting Dr. S. G. Dixon made an important communication, based on his work in the bacteriological laboratory of the Academy, on the curative and protective influence of certain materials in tuberculosis. His former researches on tuberculin were reviewed, and the results obtained by the injection of creatine, taurine, and other agents of the amide group were dwelt on. The results were such as to decidedly encourage further researches in the same line, the deductions being based on the fact that gouty and tuberculous conditions are rarely found united in the same patient, and that the production of the conditions

present in superabundant degree in gout will render the system immune to the encroachment of the graver disease. A case of lupus treated on this theory had, he believed, resulted in cure.

Prof. Ryder spoke of his studies of the spinal cord in certain embryo birds, where, in the lumbar region, a cushion-like mass of tissue, consisting of loose spindle-shaped cells, is interposed between the lateral columns. He had found no such opening in the posterior part of the cord as had been described by Foster and Balfour. The structure was found in the young bird only when it was ready to be hatched, not earlier. In some birds, as the ostrich, there is a manifest enlargement of the vertebral column in the lumbar region, which may be occupied by the tissue described. Prof. Marsh had suggested that such enlargement might indicate the presence of a lumbar brain.

Prof. Cope stated that the greater part of the cranial cavity in reptiles is occupied by fat and connective tissue, in which the brain is embedded. The lumbar expansion in certain extinct reptiles may be occupied in the same way, although Prof. Ryder's explanation might be correct.

Referring to an unusually large specimen of the remora, or sucker fish, on the table, Prof. Ryder remarked that when the species is kept in an aquarium the gills can be observed to move rapidly, as if the fish were in need of a more liberal supply of oxygenated water, but when it attaches itself by its sucker to another fish and is thereby rapidly drawn through the water, such evidence of distress is not perceived.

Mr. Lewis Woolman exhibited specimens of sea actinia recently thrown up on the beach at Wildwood, N. J., in large numbers.

Prof. Cope presented for publication a paper on the reptiles and batrachia collected by a zoological expedition sent by the University of Pennsylvania to the West Indies in 1890 and 1891. The zoologist of the expedition was Mr. J. Percy Moore. To his care we are indebted for an excellent series of the vertebrata of the islands visited. The collections from Crooked Island and Inagua are especially important, as but little was previously known of their vertebrate fauna. Six of the forms had not been before described.

**The Hudson River.**

The Hudson River, as we call it, along the western shore of the island of Manhattan, is now a majestic estuary rather than a river, and is deep enough for all the uses of great ships. But its present bottom is formed of the rock wreckage of an earlier day, which has largely filled up a chasm once several hundred feet deep, through which the old river ran.

So colossal was the sheet of ice which came sweeping down from the northwest over the top of the Palisades in the ice age that this ancient chasm of the Hudson River—a veritable canyon once—changed its course no whit. For the direction of the grooves and scratches seen everywhere on the exposed surface of the Palisades, and pointing obliquely across the river's course, run in the same direction as do those on the rocks over which the city stands.

It not infrequently happens that steamers and ships bound for New York, when not quite certain of their whereabouts as they approach the coast, are compelled to seek what help they can by consulting the nearest land, which under these conditions is the sea bottom. The sea bottom along our coast has been so often and so carefully "felt" that we know a great plateau extends out beyond the coast line for some eighty or ninety miles, where it suddenly falls off into the great depths of the Atlantic. The place on which New York stands was, it is believed, once much higher than it is now, and was separated from the North Atlantic border by some eighty or ninety miles of low sea coast land, now submerged, and forming this great continental plateau. Indeed, the New Jersey and adjacent coast is still sinking at the rate of a few inches in a century.

For us to-day the Hudson River ends southward where it enters New York harbor. But a channel, starting ten miles southeast of Sandy Hook, and in a general way continuing the line of the Hudson, runs across the submerged continental plateau, where finally, after widening and deepening to form a tremendous submarine chasm, it abruptly ends where the plateau falls off into the deep sea.

This chasm, near the end of the submerged channel, is, if we may believe the story of the plummet, twenty-five miles long, a mile and a quarter wide, and in places 2,000 feet in vertical depth below its submerged edges, themselves far beneath the ocean's surface.

This "drowned river" is probably the old channel of what we call the Hudson River, along which a part of the melting glacier sent its flood during and at the close of the age of ice.

And so at last—rounded and smoothed rock surfaces, where once sharp crags towered aloft; glacial grooves and scratches on every hand; erratic boulders, great and small, cumbering the ground; a typical rocking stone delicately poised by vanished forces long ago; a terminal moraine so great that it forms

picturesque landscape features visible many miles away—these are some of the records of the great ice age which one may spell out in a holiday stroll about New York.—Harper's Magazine.

**Monazite.**

Monazite is a strange, rare mineral found in that rich metallic heart of the Appalachian Mountains that lie in North Carolina. Some year or so ago, one of the gold mining companies down there discovered in their placers a deposit of small, brown crystalline sand which was quite unfamiliar to any of the miners. They sent a sample to their agent here in New York, says the N. Y. Sun. The agent sent it to a famous German analytical chemist, by whom it was recognized as monazite. Up to that time it had only been found in small and scattered deposits in such widely separated localities as Finland and Cornwall, Norway and Bohemia, and in such small quantities that only the richer laboratories had any specimens. It was not like anything else under the sun, and so the few brown octahedron crystals that had been bottled up were labeled monazite, or the "lonely" or "solitary" mineral. The composition of the mineral was even more curious, for it was found to contain six of those undefinable products known as "rare earths" and all ending in "ium," which is a peculiarity, it seems, of these imperishable dusts. What these dusts had gone through before arriving at the catalogued state of "iums" and "ites" can only be guessed at, but the inference is that they had been born in a period of intense cosmic energy, for they proved to be the most "refractory" things on record.

Chemists call things refractory when they can neither melt nor burn them back any further toward the point of elementary origin, and these earths wouldn't go back at all. No matter how great the heat, they just became incandescent, and glowed with a brightness that was like that of the sun; but when the flame was turned off they were just rare earths, undestroyed "iums" as before.

It happened about this time that a certain illuminating company was looking for just such a material as monazite, and in correspondence heard of it. Investigations were made, experts were dispatched to North Carolina, and monazite was found by the ton. Along the river banks and in the river beds, in the clefts of auriferous rocks, and at the bottom of gullies the brown crystalline sand was found, and bought and shipped to Germany. But it took a lot of sand to furnish the imperishable material in the shape that was needed, and the price went up until it reached \$150 a ton, and from that up to \$200 and over. Then the search for monazite was begun in earnest, and now in Alexander, Madison, Mitchell, Yancey, Burke, Polk, McDowell and Rutherford Counties there is a monazite boom.

**Cold that Burns.**

Burning is usually associated with heat, and it seems a misnomer to speak of cold burns. Chemists tell us that there is really no such thing as cold, which is relative heat, and that the lowest temperature yet registered is some degrees above absolute cold.

At the last meeting of the Swiss Society of Natural Sciences at Lausanne, M. Raoul Pictet gave some particulars concerning cold burns experienced by himself and assistants during his investigations of the lowest temperature attainable. There are two degrees of burns. In one case the skin reddens at first and turns blue the following day, and subsequently the area of the spot expands until it becomes nearly double its original dimensions. The "burn," which is usually not healed until five or six weeks after its occurrence, is accompanied by a very painful itching on the affected spot and the surrounding tissues. When the burning is more serious, produced by longer contact with the cold body, a burn of the second degree is experienced. In this case the skin is rapidly detached, and all parts reached by the cold behave like foreign bodies. A long and stubborn suppuration sets in, which does not seem to accelerate the reconstitution of the tissues. The wounds are malignant, and scar very slowly in a manner entirely different from burns produced by fire.

On one occasion, when M. Pictet was suffering from a severe burn due to a drop of liquid air, he accidentally scorched the same hand very seriously. The scorched portion was healed in ten or twelve days, but the wound produced by the cold burn was open for upward of six months. In order to try the effect of radiation in dry cold air, M. Pictet held his bare arm up to the elbow in a refrigerating vessel maintained at 105°, when a sensation of a peculiarly distinct character was felt over the whole skin and throughout the muscles. At first this sensation was not disagreeable, but gradually it became decidedly so, and after three or four minutes the skin turned blue and the pain became more intense and deep seated. On withdrawing the arm from the refrigerator at the end of ten minutes a strong reaction was experienced, accompanied by a superficial inflammation of the skin.—Newcastle Chronicle.