THE BOULEVARD LAFAYETTE, IN THE CITY OF NEW YORK.

We have already described and illustrated the Harlem River Driveway, extending along the edge of the Harlem River from 155th Street to the north, and terminating at Dyckman Street, near the north end of the island, a road designed to provide a speedway for horses. While this work has been going on, which is destined to result in the development of a magnificent park region along the banks of the Harlem River, a similar work of equal or greater importance has been in progress, and is now nearly completed, on the west side of the island of New York, along the banks of the Hudson River. The backbone of New York is, to a great extent, primitive gneissoid rock, and the shores of the Hudson River, in many places precipitous as those of the Harlem, are composed largely of this formation. Starting at the intersection of the Boulevard on the line of the Eleventh Avenue, the Boulevard Lafayette, the work to which we have alluded, runs westerly a short distance and then, turning to the north, winds along the bank of the river, high above its level, until, in the neighborhood of Inwood, it turns to the east and intersects Dyckman Street. Most of the work upon it is done, and next summer, it is believed, will see it completed.

By an act dated June 15, 1868, what is known as the Boulevard, corresponding to the old Bloomingdale Road, was designated as extending from Fifty-ninth to One Hundred and Fifty-fifth Street. By an act of June 18, 1873, the Boulevard was ordered to be opened and widened from One Hundred and Fifty-fifth Street to the present Dyckman Street, 100 feet being assigned as its maximum width. An ordinance dated October 16, 1891, empowering the Department of Public Works to do the work, went before the Mayor and was approved. The law empowering the Commissioner of Public Works to open the Boulevard to any width within the 100 foot limit appears among the laws of 1891, chapter 219, and the name of Boulevard given by an act of 1870 to this portion has been changed to the Boulevard Lafayette, a most appropriate name, on account of the revolutionary associations of the region.

The bird's eye view shown at the foot of the cut gives the general course of the road, and shows how, connecting with Dyckman Street, it will lead to the northern end of the Harlem River driveway. But this is not all. At the point of connection of the Boulevard Lafayette with Dyckman Street, the old Bloomingdale Road, or Broadway, a fine macadamized boulevard, passes, leading to Kingsbridge, Yonkers, and the country north thereof, and running south to the city. Then between Broadway and the Boulevard Lafayette is another boulevard, known as Fort Washington Avenue, so that a number of circuits and openings and outlets are provided irrespective of the Harlem Driveway.

Starting at about 155th Street on the south side and winding through Audubon Park, the view at the upper right hand corner of the cut shows what may be termed the opening of the new Boulevard. It soon reaches the river, and our other views are drawn at different points along the line. Some are drawn looking north and others looking south, the river, which lies to the west of the Boulevard, showing how each view faces. The 100 foot width has been included in the survey, but owing to the expense, the road for the present has been made but 60 feet wide. This 60 feet, however, has been measured in from the western line of the survey, so that any future widening will be done by cutting into the hillside toward the east, the level of the road being definitely fixed by the present operations, and the retaining walls being adapted for the ultimate widening. In some parts the ground is exceedingly steep and rocky, and along the western edge at many places a high retaining wall has been built, laid dry and to a batter of three inches to the foot. The roadway proper has been given a uniform width of 40 feet. As the bottom or foot of the retaining wall marks the western limits of the 100 foot space, it is obvious that the area available for the sidewalk varies. In some places, where the wall is 45 feet high, the batter alone occupies over 10 feet of the width which the sidewalk would otherwise have. The sidewalk space, therefore, varies from 10 to 20 feet. In order to get filling and stone for the wall, the contractor availed himself of the fact that the 100 foot width was at the disposal of the city and cut into the hillside for filling, so that in many places the excavation has practically reached the 100 foot limit without the city having to pay anything extra. The sidewalk will be curbed and flagged and the roadway be left as a first-class dirt road, so that a speedway will really be available and at the service of the horsemen of the city within a few months.

The views from the road are superb. From its retaining wall and western edge a precipitous woody and rocky hillside descends to the river edge, along which wind the tracks of the Hudson River Railroad. Then the waters of the Hudson River, at this point about a mile wide, extend to the Palisades, which rise from three to five hundred feet, a most impressive feature and one which is to be hoped will be soon protected by legislation from destruction by blasting. Near the southern end of the Boulevard, beginning at about 170th Street, a city park is to be established. This embraces the area approximately bounded south and north by 170th and 183d Streets, and bounded on the east by the Boulevard and on the west by the river. It includes Fort Washington Point, seen in the bird's eye view projecting to the west into the Hudson River, one of the most picturesque spots on the island. This park is destined with its long water front to form the most beautiful of our city parks, but the three miles of the Boulevard Lafayette alone will almost represent a park. The unexcelled beauty of its views can only be judged by actual inspection. Those conversant with the driveways of other cities here and abroad say that the Boulevard Lafayette is the most beautiful boulevard in the world. From one point upon it the Hudson River can be seen running northward as far as Tarrytown. We hope later to recur to the subject.

The work has been in direct charge of Mr. W. M. Dean, superintendent of street improvements, and has been executed by Mr. Rhody McLaughlin, contractor.

Periodical Comets Due in 1895.

BY W. T. LYNN, B.A., F.R.A.S.

Two comets of short period are due to return to perihelion in the course of the present year, but whereas one of these, which is in view while we write, has been seen at no fewer than twenty-six returns and consecutively since that of 1818–19, when it acquired its name from that of the illustrious astronomer who investigated its motions and calculated its orbit, the other has hitherto been seen at only one appearance.

The first comet is, of course, our old friend Encke, which was first discovered by Mechain, at Paris, on the 17th of January, 1786, and first seen the present appearance on the 31st of October, 1894, at Nice, being then in the constellation Pegasus. very near the place predicted for it in the ephemeris of Dr. Backlund (Astronomische Nachrichten, No. 3,263), who, we regret to notice, states that at this is the last time that he will be able to undertake its calculation. The comet, he finds, will pass its perihelion on the 4th of February; the last time it was in that position was on the 18th of October, 1891, on which occasion it made one of its very near approaches to the planet Mercury.

The other comet due in 1895 was discovered at its first appearance on the 16th of July, 1884, by Prof. Barnard, now of the great Lick Observatory in California, but who was then at Nashville, Tenn. Although thus discovered in the northern hemisphere, the comet remained throughout that appearance in the southern. Dr. Gill and his assistants afterward obtained a number of observations of it at the Cape of Good Hope, and it was also observed at Melbourne and other places, but was always very faint and difficult of observation. Its orbit was determined by Herr Berberich to be one of short period, amounting to only about five and a half years: but its position at the return expected in the winter of 1889 was exceedingly unfavorable, and it was not seen. Another appearance will be due in the summer of the present year. Herr Berberich calculates (Astronomische Nachrichten, No. 3,260) that it will then be somewhat brighter than at the return when it was discovered in 1884, and that its perihelion passage will probably take place on the 3d of June. Its distance from the sun, when least, is nearly equal to that of Mars.—Knowledge.

Phonograph versus Graphophone.

A decision was rendered in the Supreme Court of the District of Columbia on December 24, in the suit which had been pending for nearly two years, brought by the American Graphophone Company, nominally against the Columbia Phonograph Company, but the real parties defendant being Thomas A. Edison and the Edison Phonograph Works. It was alleged by the American Graphophone Company that the original Edison tinfoil phonograph was a failure, as the sound records it made were not accurate, permanent, nor capable of being reproduced as often as desired, could not be detached from the machine, handled, and transported, and that the art as now known was created by the inventions of Alexander Graham Bell, Chichester A. Bell, and Charles Sumner Tainter, who began their work under the auspices of the Volta Laborator Association, and whose patents were afterward acquired by the American Graphophone Company, and that every phonograph, every phonograph cylinder, and every phonograph record became practical and valuable only so far as it relied upon the principle of engraving the record as distinguished from the abandoned method of indenting, used in Edison's original tinfoil phonograph. No testimony was taken for the Columbia Phonograph Company in the case, and when the time limit fixed by the court had almost expired the defendant withdrew counsel and allowed a decree by default. The court finds for the American Graphophone Company on every point, issues a decree of injunction against the defendants, and orders an accounting by the auditor of the court. Other suits are pending in New Jersey, New York, Ohio, Massachusetts, Illinois, and Kansas.

Curious Foods of the Fishes in the New York City Aquarium.

The work of providing suitable food for the many varieties of foreign and domestic fish in the New York City Aquarium makes a very curious and interesting study. The food provided is as nearly as possible like the food the fish eats in its natural free state. The fish are fed once a day at a regular hour. The live food is placed in the tanks and is soon captured by the fish, and the dead food is thrown into the pools as required and the part not used is afterward taken out to keep the pool clean. It is found necessary to have as much variety as possible in fish foods, since the fish are very fastidious in their diet and often refuse to eat the food offered them.

The live food consists of clams, shrimp, killies, crabs, and a variety of small fish. Clams are used in large quantities, being cut up into sizes to suit the fish. For sharks and such large fish live menhaden are placed in the pools. The skate and the dog fish eat large snails, the striped bass are fed on soft crabs. The smaller fish require especially prepared fish. If clams are fed them, for instance, they have to be cut up into mince meat or else carefully scraped. The sea anemone, for instance, are fed on crabs and the soft parts of oysters, and it is necessary to place these particles of food on forks to place them within the anemone's reach. The sea horses are especially delicate feeders, and great care is taken in preparing their food. A minute crustacean is sometimes put in their tanks. Shrimps are also used at times for this purpose. They must be perfectly fresh, however, and be served with the greatest care to make it resemble the sea horse's natural food.

The barnacles are provided with a net which they move through the water to secure their food, and are also very particular in their fare. The juice of clams or oysters is usually fed to them by dropping it in the water directly above them. The barnacles subsist on the fibers of the mollusk. The smaller crustaceans are fed with very small pieces of young hermit crabs, snails, lobsters, etc. The coral polyps and other very small varieties are fed in a similar way. Great care is always exercised to provide the best quality of food and to vary it so as to make it appetizing to the fish. The work of feeding and the antics of the fish while eating are well worth watching. The feeding hour is indeed by far the most interesting part of the day in the great aquarium.

Lucifer Match Inventor.

It has been generally believed, and we gave the statement some years ago in the Leisure Hour, says the editor, that the invention of lucifer matches was due to Mr., now Sir Isaac Holden, M.P., who still survives as one of the oldest members of Parliament. This was in 1829, as we then said. In boyhood, before that time, a little bottle of phosphorus in a case was the ne plus ultra of invention, and was used instead of the ruder flint and steel with tinder, either for domestic purposes or for the surreptitious midnight feasts of schoolboys.

It turns out that the real inventor was John Walker, an apothecary of Stockton, two years earlier, in 1827. In a lecture in the Borough Hall of Stockton on "Methods of obtaining light and fire in all ages and among all nations," Mr. Parrott, the lecturer, exhibited the old shop book of Mr. Walker for that year. It was shown that a box of lucifer matches, getting light by friction, was sold in April, 1827, to Mr. Hickson, a solicitor, for 1s. 3d.

So important is the discovery deemed that an influential committee is formed to erect a statue to John Walker. Sir Isaac Holden is an honorary member of this Stockton committee, stating, when nominated, that he was not aware of the priority of invention. Other claims have been made in France and Germany, but the honor or good fortune certainly belongs to John Walker, who died in May, 1859, aged 52.

It was the beginning of a most wonderful movement in history, art, and commerce. Think of the superstitious awe with which, not in Jerusalem alone, but throughout the nations who are ignorent of the invention, is hailed the "miraculous" light obtained from lucifer matches! How vast the wealth derived among civilized races from the manufacture of "safety matches" of all kinds! A memorial plate has meanwhile been fixed on the site of Mr. Walker's old shop in the High Street of Stockton.

Tons of Caterpillars.

Thirty-six tons of caterpillars and a large number of cocoons were destroyed in the effort to drive the pest from the young plantations of trees on Hong-Kong Island. They appeared on the pine trees with which the government is trying to reafforest the island, and lasted for two months. Stations were established where the caterpillars were received and paid for by weight; this method seems to have been successful. It is estimated that 35,000,000 insects were killed.

The American Voice.

Why is not as much attention paid to the pleasure to be derived by way of the ear as the eye? In this country we treat the ear barbarously. The ear gets the minimum of pleasure, and it retorts by aggravating the nerves. And so it happens that much of the discomforts of our life come through the ear. What the foreigner most notices in this country, until he becomes, as we are, more or less callous to it, is "noise." We are not simply pitched on a high key nationally, but on a discordant key. It is not a gayer or more animated country than some others, but it is noisier. Certainly we do not cultivate harmony or moderation. To begin with, the "American voice" has an unenviable reputation. It is apt to be shrill, strident, high-pitched, unmodulated. This quality adds an unnecessary aggravation to social life. It disorganizes the nerves, and increases the tendency to nervous prostration—this and the other unchecked noises. The human voice ought to be a delight; it was meant to give musical pleasure.

There is no good reason why the American voice should not give pleasure. The voices of uncultivated races are often delightful. The negroes set us a good example in agreeable tones. That there is no radical incurable defect in the American voice we know, because we have had orators whose tones were as musical as the organ and the flute; there are communities where we hear for the most part modulated, low, and pleasing speech; and it is getting to be admitted that an American singer is the peer of any in the world. But in general no care is taken about the voice in speech. Girls as well as boys are permitted to make home discordant and school a babel of mere noise by the most vulgar and rasping use of the vocal organs. Mrs. Browning might have written, with us in view, a more pathetic poem on the "Cry of the Children." If children ought ever to be whipped, or, to put a case more in consonance with the tendency of the age, if children ought ever to whip their parents, the castigation should be given for the harsh, piercing, and discordant voice. It is idle to say that this sort of voice is natural to them. Any voice can be cultivated to a degree that it shall not be unpleasant, and this education should go on from infancy in every home and every school. It is a matter of public interest for the public pleasure. Think what a tea party might be!

The voice is, however, only set to the pitch of the other noises. In all thickly settled communities the ears are split and outraged by the steam whistle of the factories and the locomotives. In the depths of the night the startled sleeper has the veil of seclusion torn away from him by the scream of the whistles, the invalid's excited nerves are worn to rags by the barbarous pipe of the locomotive. We skringe and suffer with only faint protest. It is only a part of the universal noise and hubbub. Most of this screaming of the steam demon is absolutely unnecessary in this day of clocks and watches and guarded railway crossings. But if we must have the whistle, why not invent one that is moderately musical instead of being a torture? This is a suggestion of quiet-loving people, who find the noise of our American life every day more intolerable. Perhaps any abatement of it would not suit the majority, who like to go tearing and whooping through the world.

It is fortunate, considering our voices, that we are not Moslems, for then we should substitute for the muezzin's melodious call to prayer a harsh summons that would frighten every sinner back into his bed, and compel him to stop his ears against the rasping invitation to devotion. But is it altogether fortunate? For have we not the church and other jangling bells? These give out noise and nerve-shaking clamor instead of melodious notes. There are few bells in the United States that are agreeable to the ear. The foundries seem to go on the idea that anything in the shape of a bell will answer the purpose, with little or no regard to its tone, and we are called to church with the same metallic anger that invites us to a fire. The manufacturers are probably indifferent because the public are indifferent. Their products are mechanical, and only by chance musical. There is the need of art in the making and ringing of a bell, as in the making and playing of a piano. We appear to be content with any mass of metal cast in the bell shape, and to let a ringer with the instinct of a blacksmith evoke its dissonance with a sledge hammer.—Charles Dudley Warner, in Harper's Magazine.

Work in High Altitudes.

Some curious facts were brought to light on the capabilities of men to labor at high altitudes during the construction of the Peruvian Central Railroad. This line starts at Lima, and proceeding inland, reaches its highest point at the tunnel of Galeria, 15,645 feet above sea level. It is stated that men were able to do a fair "sea level" day's work as long as the altitude did not exceed 8,000 to 10,000 feet above sea level; but beyond this there was a sudden falling off in the work of one-fourth to one-third up to heights of 12,000 feet, and at still higher elevations 100 men were required to do work easily done by 50 at sea level.

A PNEUMATIC BICYCLE BRAKE.

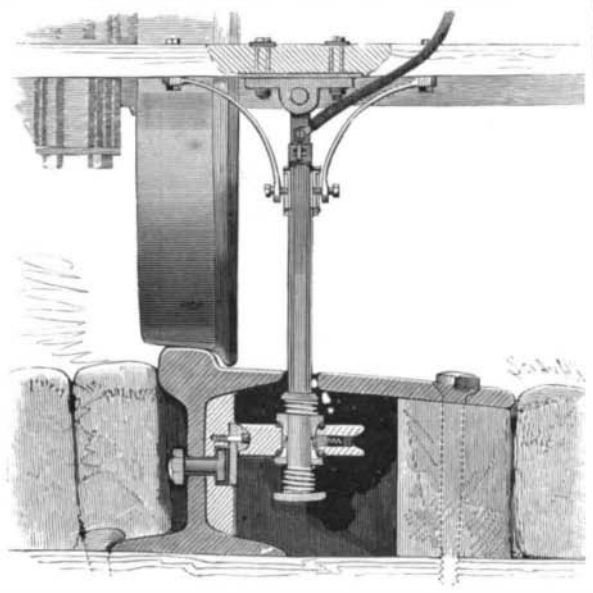
An extremely simple and inexpensive brake, with which pressure may be immediately brought to bear on the wheel by operating a hand bulb, provision being also made for instantly releasing the pressure, is represented in the accompanying illustration. It forms the subject of a patent recently issued to Dr. Wm. B. Wallace, 144 East Sixtieth Street, New York City. A portion of its structure is out of sight in the hollow frame of the machine, its supporting plate being bolted to a flange of the steering fork, in the upper portion of which is held the usual slide tube connecting with the handle bars. To the under side of the supporting plate is hinged a plate carrying a concave shoe adapted to bear against the wheel tire, the hinge plate being normally raised by a spring, connecting it with the

WALLACE'S PNEUMATIC BICYCLE BRAKE.

supporting plate, while between the two plates is an inflatable bag connected by a tube with a bulb which partially encircles one of the handles of the handle bar. The tube is elastic, but has a rigid section, to enable the length of the inflating tube to be adjusted to suit the height of the slide tube. The brake is applied by repeated squeezing of the bulb, producing air pressure in the bag or flexible reservoir above the plate carrying the brake shoe, the air pressure being removed and the brake released by opening an ordinary escape valve at one end of the bulb. The device may also be used as a hydraulic brake, and may be applied on vehicles other than bicycles.

AN ELECTRIC RAILWAY CONDUIT.

In the conduit shown in the engraving one side is formed by one of the rails, and the trolley arm is so arranged that it will have the necessary flexibility and still be sure of making a positive contact with the line conductor. The improvement has been patented by Mr. Albert M. Burgher, Clay City, Ky. The opposite



BURGHER'S CONDUIT ELECTRIC RAILWAY.

side of the conduit is formed by a timber laid parallel to the rail, a guard plate being secured to the top of the timber, leaving a slot between it and the rail for the trolley arm, while a strip of wood coated with insulating paint is bolted to the web of the rail. The heads of the bolts are covered by insulating blocks, against which is secured the line wire, having a flattened face and rounded outer side. The trolley arm is pivoted at the top to have a limited lateral movement in a bracket insulated on and rigidly fastened to the truck frame, the portion of the arm lying adjacent to the conduit top being coated with insulating material held in a casing. On the opposite sides of the casing are recessed wear plates which receive screws in the ends of curved springs rigidly attached to the truck frame, and pressing with equal tension on opposite sides of the trolley arm, holding it perpendicularly, and yet permitting the car and arm to have the necessary movement in relation to each other. The hub of the trolley wheel is held on the trolley arm between springs, to provide for the up and down movement of the car, the wheel being grooved to fit snugly on the line wire, and provided with ball bearings, while, to insure a perfect contact, it has a radial bore in which is held a copper plunger, the inner end of which is held in close contact with the hub by a spring. In front of the trolley arm is carried a guard, hung in the same way, to brush aside any possible obstruction. The improvement is designed to afford an inexpensive and efficient substitute for the present overhead trolley systems.

The Color of Horses.

Mr. W. H. Hawkes writes to the Australasian as follows on that vexed question, the color of horses:

"It is an old saying among horsey men, 'a good horse was never a bad color,' and yet popular prejudice assigns all sorts of good or evil traits of character to particular colors. I can quite understand this with those who do not know better; but that an expert, like an Indian buyer, should hold to the popular fallacy is almost beyond belief, seeing that we have had innumerable instances, both in the old country and here, to the contrary. It was recently that some four or five races were won in one day upon one of our local courses by chestnuts, and I think the fact was mentioned by one of your contributors, and they are equally good either in saddle or harness. Yet there are numbers who will condemn a chestnut at once for his color only, be he ever so perfect in every other respect. The objection to a gray one can understand from a groom's point of view, seeing that they are so difficult to keep free from stains as age whitens their coats, but for no lack of good constitution or disposition.

"Some will tell you that a roan is the hardiest of all horses, and yet I venture to assert that a greater portion of aged roans does not exist.

"Others credit black horses with being allied to the devil himself for temper and untrustworthiness. The only objection to him is that he is very rusty in his winter garb.

"'White legs are always a sign of weakness,' you are told by many. But I think three to one would be fair betting against the one white leg out of a set of four, the others being black. What about Odd Stockings and All Fours? Surely if white legs were a sign of weakness, such horses should break down at a very early stage of their career. Most judges prefer bays with black points, and it would be difficult to beat them for general appearance the year through, but I for one should certainly deny to them a monopoly of sound constitutions, tractability, intelligence, and all other virtues. I am quite with Mr. Basil Gray in his general remarks, but even he errs the other way, as he credits white legs with being indicative of some peculiar virtue—or, as he says, they always denote quality.' This I very much doubt. That skillful breaking and future wise education has most to do with the character and usefulness of a horse, as well as a man, irrespective of his color, can, I think, he accepted as a settled fact. Renfrew was a splendid tempered horse until teased to such an extent that he became a man-eater. Many a two-legged brother has had his character spoiled by those who should have helped to make him better. That horses, like men, have their temperaments goes without saying. That an eye for the beautiful leads fanciers to reject piebald, skewbald, and horses with wall eyes and big blazes for hacks or carriage purposes is not to be wondered at. But that any should condemn many of our really beautiful chestnuts is an enigma.

"The objection purely to color is, I think, much akin to the action of one who crosses himself when passing in the street a person with oblique vision."—Bell's London Messenger.

Cheap Street Car Fares in Philadelphia.

The reduction of fare by the trolley cars to Germantown to 5 cents and to Wissahickon and Manayunk to 8 cents furnishes two very practical illustrations of the benefit to the public of the introduction of the new street car motor. One reduction was inspired by competition and the other appears to have been a concession to a popular demand, possibly expedited by a desire to anticipate steam railroad competition. Under the reported traffic agreement between two lines occupying the chief streets lying immediately west of the Delaware, it is probable that with the opening of spring passengers will be carried from any part of the city to any of the principal entrances of the East and West Park for a single fare. It is equally probable that the competition of rival lines will result in single fare transportation to Frankford in the northeast and Darby in the southwest. That many people now residing south of Lehigh Avenue will seek homes farther from the heart of the city may be surely counted on, but the sections abandoned for residence purposes will probably be occupied for business purposes. This was the effect of the introduction of the old street cars. The introduction of the trolley has more than doubled the possible residence area of the city.—Philadelphia Times.