The Volta Centenary.

Information regarding the electrical exhibition at Como and the Volta Centenary is of rather mournful interest after the recent fire which destroyed the entire exhibition. The site chosen for the buildings was picturesque in the extreme, being located near the southeastern corner of the beautiful lake, says a correspondent of the English Electrical Review, and was easy of access by rail or water. The exhibition building proper consisted of a crescent-shaped galley with façade, the extremities of the towers being constructed in imitation of the well known Voltaic pile. From the back of this construction opened three extensive galleries, the center one terminating in a circular building. Running parallel with the face of the building, and intersecting the center of the circular gallery, were other galleries devoted to electrical exhibits. A very large part of the exhibit consisted of ingenious electrical domestic appliances. Our English contemporary says, "We were surprised to find that in nearly every instance an inspection proved these appliances to be of American manufacture." This paper is of the opinion that as an electrical exhibition it was of little or no importance. At the southern end of the galleries was the exhibit of relics of Volta and Galvani, which we have already illustrated and which were unfortunately nearly all destroyed by the fire.

A TRANSCONTINENTAL AUTOMOBILE VEHICLE.

Our engraving represents Mr. and Mrs. J. D. Davis starting on what will probably be the longest automobile trip on record, the goal being San Francisco. In this country we have not as yet had any very long runs, Cleveland to New York (708 miles) being, we believe, the longest on record. There is no more delightful way of seeing the country than to view it from the comfortably cushioned seats of an automobile vehicle, which is never tired, and knows neither hunger nor thirst. After the industry becomes better established, we would not be at all surprised if automobile trips from New York to Boston or New York to Lake George were of almost daily occurrence during the season when the roads are in good condition.

With a strongly constructed touring car made especially for the purpose there would be no difficulty in making sixty to seventy miles a day over ordinary roads and probably few travelers would care about doing more than forty miles a day. At present carriages using some of the products of petroleum as fuel are the best adapted for touring purposes, but undoubtedly, in time, along all important roads there will be charging stations, so that the electric vehicles will be on the same plane as those driven with the aid of gasoline or benzine.

We understand from press accounts that Mr. and Mrs. Davis are making satisfactory progress in their trip, notwithstanding a few mishaps which are apt to occur in running a vehicle of this kind. The start was made at about eleven o'clock on Thursday morning, July 13, from the front of the New York Herald building, Thirty-fifth Street and Broadway, New York. Crowds witnessed the start and cheered the venturesome tourists as they began their long journey. Owners and manufacturers of motor carriages united in giving Mr. and Mrs. Davis an escort up Fifth Avenue as far as the Harlem River. The horseshoe which is suspended in front of the carriage seems to indicate that the riders have not enmity toward horses, and it is hoped the omen of good luck will prevent horses from being frightened along the country roads of the 3,700-mile journey. The touring car used by Mr. Davis is of the well-known Duryea type which we have illustrated and described on a number of other occasions.

The route of the Davis party is up the valley of the Hudson River to Albany, then along the banks of the Mohawk, passing through Utica, Syracuse and Rochester to Buffalo, then skirting the shore of Lake Erie to Toledo, and then finally to Chicago. We believe that the route beyond this point has not been definitely decided as yet.

MANY people are apt to consider that corporations are grasping and soulless. Of course, no one will deny that this is sometimes the case, but the Montreal Street Railway Company is certainly generous. It has set apart $25,000 a year for the benefit of its employes. They will be insured in an accident insurance company of good standing, and the premium will be paid by the Street Railway Company. This insurance will amount to $1,000 in the event of an accident by any cause, one-half this amount for total disablement, and $5 per week for time lost for injuries specified in the policy. Motormen and conductors who have been in the service of the company for two years will receive an increase of pay, and motormen and conductors who have been regularly in the company's service for five years and over will receive their uniforms free of cost.

THE START FOR THE 3,700-MILE TRIP ACROSS THE CONTINENT.

AN ITALIAN PRINCE BOUND FOR THE NORTH POLE.

Prince Luigi of Savoy, Duke of Abruzzi and nephew of King Humbert, is about to attempt, as others have attempted before him, the pacific conquest of the North Pole.

The prince is the third son of the late Amadeo, ex-King of Spain. He is a captain in the navy, has twice made the tour of the world, and will be remembered

PRINCE LUIGI OF SAVOY.

for his bold ascent of Mount Saint Elias, in Alaska. He is twenty-six years of age and does not, at first sight, appear to be blessed with the strongest of constitutions; but energy and decision are read in his juvenile countenance.

The principal companions of the duke in his expedition will be his aide de camp, Capt. Umberto Cagni, an officer who is as intelligent as he is courageous, and who accompanied him to Alaska; Dr. Cavalli, of the royal navy; and Lieut. Count Quarini, a linguist, belonging to an old Venetian family. Count Quarini, during the Cretan insurrection, distinguished himself by his bravery and coolness, and received the silver medal awarded for military valor.

The Duke personally directed all the preparations for the expedition with scrupulous care.

He took on board of his ship, the "Stella Polare," two tried Italian sailors, four mountain guides, ten Norwegian sailors who have had experience in the Northern seas, and an Esquimo who knows how to drive dogs harnessed to sledges. At Archangel more than a hundred dogs will be embarked. The duke's equipment will include fifteen hundred oak cases containing clothing, food, scientific material, two balloons constructed at Paris, and apparatus for the manufacture of hydrogen.

The "Stella Polare," which was fitted out at Christiania, weighed anchor Monday, June 12. After touching at Franz Josef's Land, the duke intends to proceed by easy stages, marking his route by stations that will show his progress and assure his retreat in case of necessity. The duration of his exploration will be about three years.

For the above particulars and the engraving, we are indebted to L'Illustration.

The Coloring Matter of Blue Coral.

Prof. Liversidge has made a series of experiments on the blue pigment of Heliopora cœrulea on material obtained by the Funafuti Expedition. His results are interesting, although they do not, unfortunately, throw much light upon the nature or relations of this very curious pigment. He finds that "dead" coral after treatment with hydrochloric acid yields a black pigment which dissolves in formic, acetic, and lactic acids to form a bright blue solution. The pigment is slightly soluble in absolute alcohol, but quite insoluble in ether. The residue after ignition is bulky, and contains much phosphoric acid, iron, lime, and magnesia. Curiously enough Prof. Liversidge found that pieces of "live" coral, or coral which had been gathered while growing, although of a distinct slaty blue color, did not yield blue solutions, but merely pale green ones. The pigment itself was also of a pale chlorophyl green tint. The paper concludes with a list of other blue or green coloring matters in animals. In connection with these we would draw the author's attention to the asserted occurrence of the mineral vivianite in the skeleton of Belone and some other forms.—Natural Science.

The Wyoming Exploring Party.

The expedition to the fossil fields of Wyoming left Omaha on July 18. It numbered three hundred scientific gentlemen representing nearly every university and college in the United States. The Union Pacific Railroad Company pays all the expenses of the trip, and it is hoped that the expedition will result in developing the possibilities of this great region which is so rich in fossils of the Dinosaur period. After reaching Laramie the party will go directly into the fossil fields. They will be organized into messes of ten men, each group being provided with two wagons for riding and another wagon for carrying tents, provisions and other supplies. A dark room and complete photographic outfit will be provided. Prof. Wilbur C. Knight, of the University of Wyoming, will have charge of the party. It will take one course to the Grand Cañon of the Platte and will return by another course, giving an opportunity for viewing some of the finest scenery in the West and also giving a chance to collect great quantities of vertebrate fossils.

Antique Safety Pins.

The Metropolitan Museum of Art has some interesting examples of antique safety pins, although they were not called by that name. The antique fibula is really a safety pin, and is constructed on the same principle, consisting of a pin with a coiled spring to keep the point pressed against the sheath to insure a safe fastening and to prevent injury from being stabbed by the point. The manner of using the pin may be seen by reference to many antique statues, notably the Apollo Belvidere. These bronze fibulæ vary from two to seven inches in length. Some have a guard to protect the point of the pin; others simply have a catch of bent wire. The backs of the fibulæ are of all shapes. In some cases the wire is twisted into odd forms, but usually the back is broadened out so as to admit of ornamentation. Some of the large ones have their backs hollowed, making a mere shell of bronze, on the outer surface of which are cut wavy lines and zigzag decorations. The group of buckles are also very interesting and resemble the ones in use to-day. Several of them were illustrated in a recent number of The New York Sun. In beauty of design the ancient buckles were more than the equal of anything of the kind which is being made at the present time.

The Hyacinth Pest in Florida.

The hyacinth pest in Florida is of alarming proportions, especially on the St. John's River, and its tributaries. For several years residents have strenuously battled against the plague of the hyacinth plant which has invaded their waterways, hindering not only commerce, but various industries and inflicting severe pecuniary loss on many. At last the plague has reached so serious a stage that the War Department investigated the matter and bills were introduced into Congress with a view of remedying the difficulty. The Windsor Magazine recently had an interesting article on the subject entitled, "A River Choked with Hyacinths," written by Walter Akroydd, from which we obtain our information. The particular species of hyacinth which chokes the St. John's River thrives only in water or in places where the soil is very marshy. As a rule it simply floats upon the surface of the water without any attachment whatever of its roots to the soil, and under these conditions it flourishes more luxuriantly. The flower is not of the pretty bell-shape which characterizes the bloom of the flower which we ordinarily know by the name of hyacinth, nor is the range of color so varied. The flowers are invariably of either a light blue or violet. In the springtime the vast expanse of flowers upon the surface of the water presents a very striking picture; the leaves grow to considerable size, a bunch of stems frequently averaging from one to two feet in height. The roots also grow, in many cases, to a length of three feet, and in exceptional cases, even longer.

A pond at Edgewater, four miles above the town of Palatka, was first infested with the hyacinth plant. In 1890 the sheet of water was cleaned out and the plants were thrown in the river. They immediately grew luxuriantly and travelers and tourists were much struck by the pretty sight, and being ignorant of their multiplying propensities, they carried away specimens to grow in the rivers near their homes. In four years the fishermen began to be alarmed at the hyacinth which entangled their nets, steamers also found that their progress was retarded by huge clumps of the hyacinth. The evil has grown until at the present time the hyacinth invest the St. John's River for a distance of over 200 miles, the banks on either side of the water being fringed with a border of plants from 25 to 200 feet in width. The stream is so sluggish that the hyacinth is able to hold its own and multiply rapidly. At places the entire river is covered with a dense mat of plants so that there is a vast expanse of flowers a mile wide during the period when it blooms. Small boats with screw propellers find it almost impossible to make any headway, as the plants become entangled in the screws. Side-wheel paddle steamers fare better, but the plants are apt to collect in the paddle box, making an impenetrable blanket, so that the steamers are entirely blocked and cannot move in either direction. Steamers with low-pressure engines have their injection pipes blocked by the plants. Pieces of wood and other débris are often concealed by plants. The timber industry has been brought almost to a standstill by the hyacinths, and the loss to fishermen is most severe. In addition the towns along the river are menaced by another evil which is even more serious. When heavy rainfalls or floods occur, small drifting islands of hyacinths are carried along by them until they strike a bridge; here they clog and form a dam. The pressure of water is very great, and if the barrier does not succumb, the surrounding country is flooded. In 1894, 65 feet of trestle work that spanned the river at Rice Creek was carried away. At another bridge men had to be specially employed to push the plants through the space under the piers.

Various schemes have been devised for exterminating the plants, but it is not believed that they can be permanently banished, although it is thought that they can be kept under control. The War Department recommends the construction of a light draft stern-wheel steamer, having a double bow or outrigger, which, on being forced into a mass of plants, will cause them to gather toward the middle of the boat, where the inclined carrier will pick them up and deposit them in front of rollers driven by machinery. These rollers in turn will force the water from them, thus greatly reducing their bulk. The crushed material would then be thrown into barges and would be taken where no damage could be done. The process would be very expensive and a steamer would have to be constantly employed. It is believed that the plant cannot be entirely extirpated. Other suggestions have been the use of booms, which will catch the plants traveling with the current and bring them to a standstill. They can then be taken out and destroyed. So far, however, none of the schemes have been carried into effect. This is a splendid example of the trouble which comes from destroying nature's balance and the whole difficulty could have been prevented if the weeds had not been thoughtlessly taken from the pond in which they were and thrown into the river.

One of the things with which our Department of Agriculture charges itself is the determination of questions of this kind. Any citizen can obtain expert information in matters of this kind by writing to the Department, and if their advice was more often sought and accepted vast sums would be saved. Now, however, when it is too late, the inhabitants have invoked the aid of the Division of Vegetable Physiology and Pathology of the Department of Agriculture, and Mr. Webber has been detailed to investigate the matter. After a prolonged and careful search, Mr. Webber has discovered a disease which he considers would do widespread damage among the hyacinth plants. This is a parasite fungus which attacks the leaves in spots and in time completely kills it. It is hoped that considerable quantities of this fungus may be obtained for introduction among the hyacinths. If it does not entirely kill off the plants it will, at any rate, keep their growth in check.

On the Burlington and Missouri River Railroad, discarded locomotive flues are being utilized as fence posts. About half of the wooden fence posts are destroyed by fire, so that the new iron posts present great advantages. It is said that two workmen can turn out fifty posts per day. The total cost of the new posts is about 15 cents each, counting only labor and the value of the tubes for scrap iron.

The Current Supplement.

The current Supplement, No. 1230, has many articles of sterling value. "Incandescent Mantles" is an article by Vivian B. Lewes and gives exactly the kind of information which our readers are always desirous of knowing regarding incandescent mantles. "Rules for Conducting Boiler Trials" gives the recommendations of the American Society of Mechanical Engineers on this important question. "The Preservation of the Dune of Helgoland" describes an important engineering work on the North Sea. "Winged Carriers of Disease" is a most interesting article by Eliza Priestley. "The Wear of Modern Guns" illustrates the erosion caused by smokeless powders. "Magnetism" is a lecture by Prof. J. A. Ewing. "Miscellaneous Notes and Receipts" is published for the first time in this issue.

Contents.

(Illustrated articles are marked with an asterisk.)

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

HARROW.—Leonard F. Fowle, Rudd, Iowa. The present invention provides a simple riding attachment for harrows to which any form of drag may be quickly applied. The beam has at its forward end a depending portion fastened to the drag-bar, and on opposite sides of the beam side braces are arranged, which are secured at their forward ends to the drag-bar at points laterally to the point of connection of the beam therewith, converging thence to the beam, and secured at their rear ends to the beam. The drags can be connected with the drag-bar, so that they may play freely between the beam and the side braces.

CANE-CARRIER AND FEEDER.—Daniel H. Walsh, Plaquemme, La. The cane-carrier and feeder is designed to remove cane from cars or other vehicles and to deliver it to carriers. The invention comprises a supporting guide-frame along which the rake-frame is fitted to slide. The guide-frame is mounted upon supports in such a manner that it may be laterally moved to accommodate the rake to the width of the cane-pile and swing in a vertical plane about one end, so as to enable the rake-proper to be lifted, if need be, over the cane in its reverse movement.

Electrical Apparatus.

CURRENT TRANSFORMER.—Seth K. Humphrey, Boston, Mass. This invention is an improved device for transforming a multiphase current from one voltage to another and also from an alternating to a direct current without the employment of a rotary transformer. The device comprises a core consisting of a disk having a series of openings through and over which a number of primaries are reaved, arranged in sets placed opposite one another and connected, one set with the opposite set. The secondary winding consists of a series of coils, each having connection with segments of a stationary commutator. Auxiliary windings are extended across the center of the disk and connected in parallel with the primaries.

AUTOMATIC CIRCUIT-BRAKER.—Charles M. Clark, Brooklyn, New York city. The circuit-breaker has a spring-pressed rotary disk normally in position to render the circuit continuous. An electromagnet in the circuit is arranged for action on an overload of current. To lock the disk against the tension of its spring, a spring-pressed latch is employed, connected with the electromagnet to be actuated thereby and to unlock the disk upon an overload of current. An electromagnet for the latch, likewise in the circuit, movably holds the latch in a locking position relatively to the disk, and permits the spring of the latch to actuate the latter and unlock the disk upon the passing of an overload of current.

PRIMARY BATTERY.—Edward Baines, Brooklyn, New York city. To the ordinary gravity battery the inventor adds a perforated plate or grid located between the electrodes. Upon this grid crystals of copper sulphate are placed so as completely to cover the upper side of the grid. The current can then pass from the positive to the negative electrode by way of the interstices between the crystals. The negative electrode is, hence, in a clear solution and out of contact with the crystals.

Railway-Appliances.

TRAIN-SIGNALING DEVICE.—William A. and Benjamin S. H. Harris, Greenville, S. C. The invention provides a simple construction whereby a sound-signal can be given to the engineer by a slight reduction of pressure in the train-pipe without necessitating the use of a separate signal-pipe parallel with the brake-pipe, by placing a signaling device in direct connection with the train-pipe between the engineer's valve and the train-line. This signaling device forms part of the train-pipe and permits the transmission of signals from any car by a slight reduction of pressure in the train-pipe by the operation of the conductor's discharge-valve, the reduction being too slight to set the brakes.

CHOKE-VALVE FEED FOR LUBRICATORS.—William G. Weldon and Edward L. Egger, Centralia, Ill. This attachment facilitates the feeding of oil to the chest and locomotive cylinder when the engine is working steam, and when not working steam, or when the automatic lubricator is out of order and fails to feed oil. Connected with a casing adapted for communication with a steam-chest and lubricator-pipe, is an automatic reciprocating valve provided with an oil-passage adapted to permit the feed of oil in all positions of the valve, and having its recessed or cup-shaped lower end accessible or exposed to the action of steam from the steam-chest.

Miscellaneous Inventions.

COMBINED STAND-PIPE AND FIRE-ESCAPE.—Henry Vieregg, Grand Island, Neb. In this combined stand-pipe and fire-escape, the stand-pipe is mounted on a hanger arranged to roll on a track in front of a building, so that the stand-pipe may be placed in any position with regard to the building. The stand-pipe is provided with rungs, forming a ladder on which persons may ascend and descend.

FRUIT GRADER, DIPPER, AND SPREADER.—Ferdinand M. Starrett, Silverton, Ore. The fruit grader, dipper, and spreader comprises a grading cylinder which separates the fruit into desired sizes. The separated fruit drops into a dipping cylinder of lye-water, whence it is passed into a second tank containing clear water, the object being to check the skin of the fruit, so that it will dry more quickly, and also to clean the fruit. After being dipped for the second time the fruit is passed to the drying trays, in such a manner that it is dried in a single layer.

WINDOW-SASH.—Ettie M. Squire, Peckville, Penn. The window-sash has a main portion to which a swinging portion is hinged. The main portion is rabbeted to receive the swinging portion, and the bottom rail of the swinging portion is formed of two parts fastened together, between which the glass is clamped. One section of the rail is rabbeted to form a ledge overhanging the adjacent parts of the main portion of the sash. The vertical rails of the main portion are notched to receive the ends of the ledges. The swinging sections open without movement of the main parts of the sash, and when closed, form an absolutely air-tight connection.

CORNER-SHIELD FOR WAGON-BOXES.—Daniel W. McClaughry, Fox Lake, Wis. The object of the invention is to provide a simple device capable of attachment to any wagon-box and adapted to protect the faces and ends of the side boards, so that they will not be injured. The device consists of a shield formed with flanges and sides, the spaces between the sides being such that the shield may snugly fit the side faces of the wagon-box, so that when the shield is placed in position, the lower edge of the inner face of the shield may rest upon the bed of the wagon-box.

STEAM-HEATER.—Frederick M. Radke, Manhattan, New York city. The heater comprises a novel arrangement of mud-drum, steam-drum, stand-pipes, circulating-pipes, and feeder. Because of the arrangement of tubes in which steam is generated, the steam is forced directly into service when at its driest and hottest point. Owing to the small amount of fuel required and the use of a self-feeder, the heater requires less attention than similar devices.

COMBINED CELLAR-CUPBOARD AND DUMB-WAITER.—George W. Mentzer, Elgin, Ill. The combined cellar-cupboard and dumb-waiter consists of a counterpoised cupboard raised and lowered by a rope and pulley, and adapted to be arranged in a room immediately above a cellar or dry pit. When in its lowermost position the top of the cupboard is flush with the floor. The device possesses the merit of being portable. No nails are used in hanging. The cupboard dumb-waiter, it is said, takes the place of a refrigerator, requires but little room, and is so constructed that it can be very readily put into any house.

SLEIGH-BRAKE.—Abner D. Polleys, Melrose, Wis. The brake is designed to retard a sleigh when descending a hill and to prevent the sleigh's slipping back in ascending the hill. The device consists of a bifurcated lever provided with a spur adapted to enter the ground in response to a pull from a link connected with a handle in reach of the driver's hand. In backing the sleigh, the spur is automatically driven further into the ground, thus preventing the sleigh from slipping down an incline.

BARREL-CLOSURE.—Franz Köhn, Ploen, Prussia, Germany. Barrels used in transporting fish are provided with large openings closed by covers during transit. The present invention provides a cover of this kind, consisting of two hinged lids which cover the opening and which are furnished with hasps engaging the inner edges of the opening. The lids are held in place by a lever, pushed under a hasp.

HUB FOR WHEELS OF VELOCIPEDES, ETC.—Eugène Germaine, Paris, France. On a spindle an adjusting bearing member is screw-threaded, which is provided with an engaging portion. A locking-device longitudinally movable with relation to the spindle has an engaging portion to co-operate with that of the bearing member. A spring maintains the locking device normally in engagement with the adjusting member, the spindle and locking member being prevented from relative rotation.

CASE FOR SACERDOTAL ARTICLES.—Johann J. Eugster, New Riegel, Ohio. The case is adapted to contain in such a manner that each of them will be readily accessible, articles such as are required by clergymen for sacerdotal use. These articles are used particularly in the visitation of the sick. The invention hence provides a convenient case constructed to contain within a comparatively small space all the articles required by a priest for administering the extreme unction and for like purposes.

BALL CHECK-VALVE.—James Essex, London, Ontario, Canada. The check-valve comprises a body having a straightway passage in one end of which is an inwardly-facing valve-seat. From an upwardly-extending connected chamber a curved ball-raceway leads to the valve-seat. Within the chamber is a ball adapted to fit the valve-seat and to be forced up the raceway into the connected chamber to clear the raceway. The inventor states that the valve is trustworthy in operation, that it can be used with a brass, rubber, and even a glass ball. The chief merits claimed are cheapness of construction and efficiency of operation.

PACKAGE-SEALING DEVICE.—Joseph T. Craw, Jersey City, N. J. The present invention seeks to provide a simple device whereby the end flaps or wings of empty paper boxes or cartons, usually packed flat, may be quickly and securely sealed at one end. The device consists of a surface over which the portion of the box to be closed is passed. The surface has an opening adapted successively to receive the sealing-flaps of a box. The walls of the opening are arranged to direct the flaps to a closed position; and a cement is applied to the surface. Guides define the path in which the box is to be moved.

HAND-STAMP.—James Cooke, Omaha, Neb. The stamp consists of a handle on which is fitted a screw turned by a fixed nut. An impression disk is fixedly secured to the screw to move therewith. A second impression-disk is mounted upon the first impression-disk and is movable independently. By means of a rubber or elastic sleeve, the impression portion of the stamp has a connection with the handle that is in a measure yielding, enabling the stamp to adapt itself to inequalities of the surface to be marked.

GAME-APPARATUS.—Amsey N. Cosner and Gilbert L. Matthews, Newton, N. J. It is the purpose of this invention to provide an amusing game through