

**THE TELTOW CANAL.**

BY OUR BERLIN CORRESPONDENT.

The Teltow Canal, which has just been completed and is one of the largest artificial waterways ever constructed, is mainly intended to avoid the passage through Berlin in connection with the lively traffic going on between the rivers Oder and Elbe; and while shortening the way from the River Elbe to the Upper Oder by 15 kilometers (9.3 miles) and the journey Elbe-Upper Spree by 13 kilometers (8 miles) eliminates the difficulties encountered in draining such Berlin suburban communities as are situated to the south and west of the metropolis. Starting at the Glienicke Lake, it traverses the Lake of Griebnitz, from the upper end of which it follows the Beke Val-

The slopes have a gradient of 1:3 below water and 1:5 or 1:2 above water, according to the strength of the soil. On both banks runs a towing path 2 meters (6.56 feet) in breadth, the crest of which lies at 1.5 meters (4.9 feet) above high water. Beyond this path there is a protected strip 1 meter (3.28 feet) in breadth. An aggregate of nine railway bridges and forty-six viaducts has been constructed in connection with the main canal and its branches.

The sluice situated at Machnow is a most remarkable plant, chiefly because of the electric operation provided throughout, both for the syphons serving to fill and to empty the chambers, the lifting gates, and the special crabs facilitating the entering and issuing of vessels. Between the two chambers, each of which

their counterweight are placed. For the electric operation of the winch has been installed a rotary current motor for 220 volts tension (of 15-horse-power capacity with 600 R. P. M.) A switch designed like a railway controller serves to start it while the winch is cut off in the two terminal positions by terminal cut-outs actuated by the gates or counterweight tanks when at their highest position. These cut-outs at the same time serve to reverse the motor. A centrifugal cut-out has been provided to avoid any danger arising from an excessive speed of the motor.

The sluice is operated as follows:

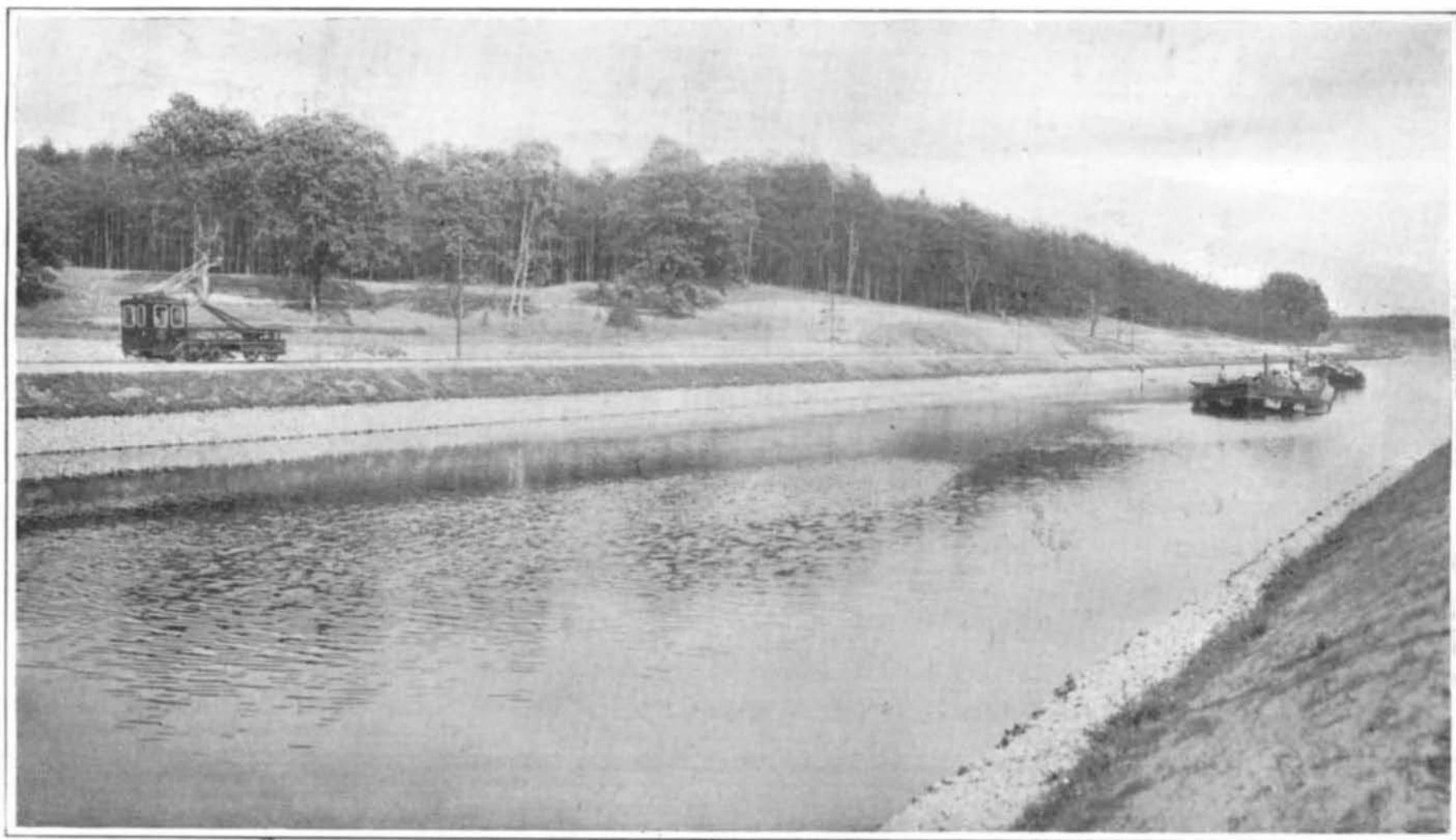
The boats arriving at the sluice enter projecting wooden guides about 140 meters (459 feet) in length, whence they are carried into the sluice chambers by



The Switches Near the Locomotive Shed.



Shed for Electric Towing Locomotives



Towing Barges by Electric Locomotives on the Teltow Canal.

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ley, and after cutting two roads and three double-track railways, passes through a large sluice situated at Machnow. After next traversing the villages of Lichterfelde and Steglitz and crossing the High Teltow, it continues its course through the western plains of the River Spree and the numerous Berlin suburbs situated there.

The cross section of the canal was designed in accordance with that of "standard" boats, that is, barges of 600 tons capacity, 65 meters (213.2 feet) in length, 8.6 meters (28.2 feet) in breadth, and 1.7 meters (5.57 feet) in draft. The useful breadth of the bottom was accordingly chosen as 20 meters (65.6 feet) with a depth of 2.5 meters (8.1 feet) beneath low water in the middle and 2.1 meters (6.6 feet) at the sides.

is connected to the upper and lower ponds by channels 2.46 square meters (26.5 square feet) in cross section, there is an outlet channel 25 cubic meters (883 cubic feet) per second in capacity, serving to discharge the Upper Spree in the case of high water.

The chambers are locked by huge vertical gates. A pump of one cubic meter capacity per second serves to carry the water used in the sluice back into the river Spree in the case of low water. The gates are moved in directions parallel and vertical to the axis of the sluice by two systems of rollers running in a vertical cast-iron guide. The gate elevator comprises an electrically-operated spur wheel winch with a shaft traversing the whole breadth above the gate, on which shaft the pulleys required in supporting the gate and

electrically-operated tractors or crabs running on the poles which project beyond the platform of the guides. The crab motor (11 horse-power) has been so designed as to insure a speed of 1 meter (3.28 feet) per second, with the largest canal barges; the crab is 1,500 kilogrammes (3,300 pounds) in weight. The current is collected in the way usual with traveling cranes, while the barges are connected to the crab by the hauling tow fixed on one side to the towing pole, and on the other to the drum arranged on the crab. A special advantage of crabs as against the capstans otherwise used is that the handling of long ropes is avoided, thus eliminating much risk to the operator. The sluice master, from a cabin situated in the middle of the platform, controls all the operations, signaling

by means of an electric bell and a green lamp signal "Gate off" to the operator in the switching room, who in order to acknowledge switches out both the bell and light. The signal "Stop" is given by means of bells and a red incandescent lamp only in case of emergency. To the south of the gates at the lower pond there is the transformer room, containing three transformers of 25 K. V. A. each for 6000/200 volts, one of which supplies the lighting current to the building close to the sluice, and the other the current for the operation of the fore-gate and for the lighting of the sluice. Three cables leading to the sluice building, switching room, and sluice master's cabin respectively start from the transformer room.

The total time taken by a barge in passing through the sluice, inclusive of its entering and issuing, is only 15 minutes. As the average load of a standard barge is 400 tons, the sluice is therefore able, allowing for a total of 270 working days in the year, to deal with an aggregate annual load of 8.64 million tons, which figure might be more than doubled by adopting a night service.

*The Towing Service.*—Trials made by Messrs. Siemens & Halske on the Finow Canal at the end of the nineties had shown the cost of operation of electric towing locomotives to be rather low, while the equipment of the plant entailed a most considerable outlay. In order, therefore, to secure a dense

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#### PROGRESS OF THE NEW YORK CENTRAL TERMINAL IMPROVEMENTS.

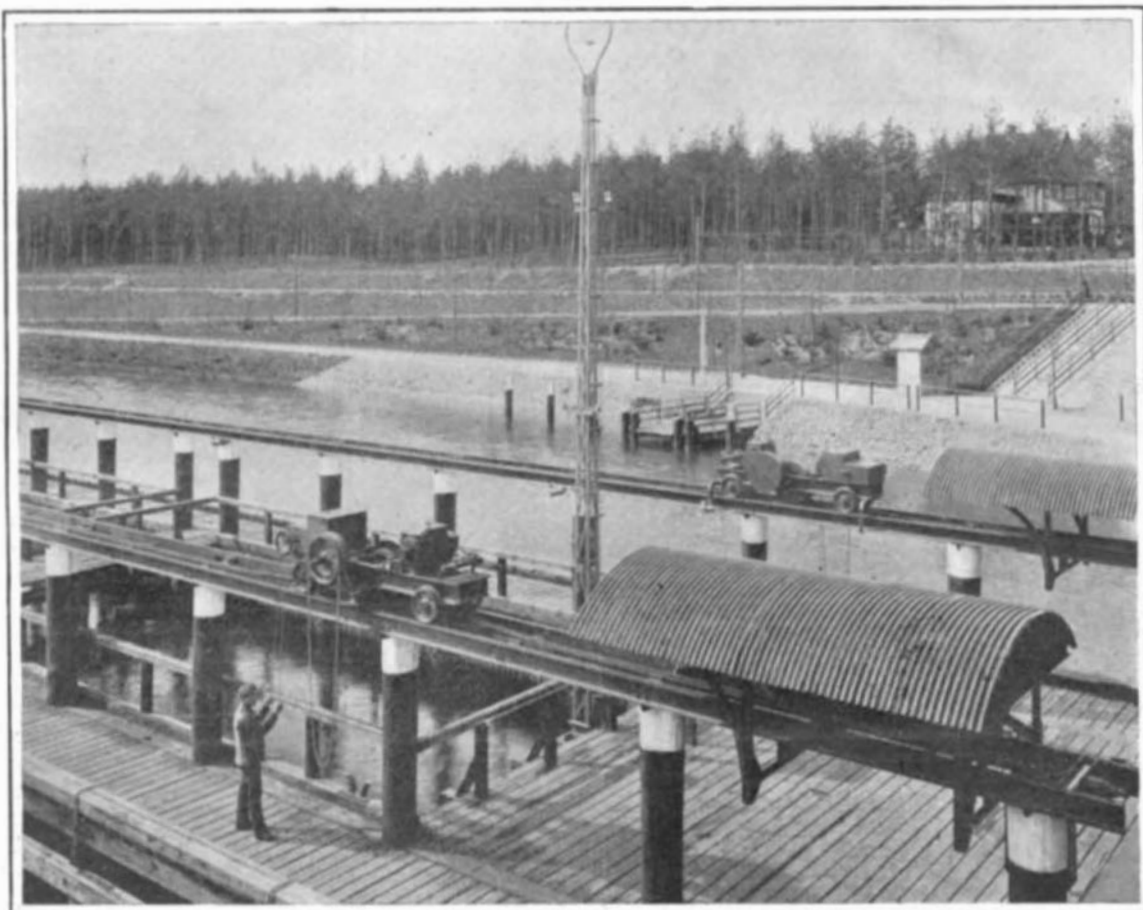
The entrance of the first electric train into the Forty-second Street station of the New York Central Railroad, which occurred on the last day of Septem-

ber, ran over only what is known as the "first zone," which extends from Highbridge for a distance of 7 miles to the Grand Central station. It was of standard weight, however, being made up of eight Pullman and special cars, and weighed altogether 550 tons.

The trip was made on schedule time, and served to indicate that the equipment is in running order and is capable of performing the work for which it is designed. It is the expectation of the company that the regular service will be operated electrically by about the 10th of November. The trains will be hauled by electric locomotives to and from Highbridge, where, for the present, the electric locomotives will be switched off, or on, as the case may be, and the steam locomotives take their place. Although only a portion of the whole electric zone will be operated in November, the work of equipping the system as far as Croton Landing on the main line, and White Plains on the Harlem branch, is well advanced, and it will not be long before the trains will be electrically operated between Forty-second Street and those two points. By the courtesy of W. J. Wilgus, vice-president of the company, we present a series of photographs showing the present condition of the work, and by way of

making them clear we will briefly recapitulate the leading features of the whole plan of terminal improvement.

The new station yard commences at Fifty-seventh Street, where the tunnel has been excavated to the



Electrically-Operated Tractors for Hauling the Barges Into a Double Lock.

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ber, indicates that the first section of this great work of electrical equipment will be soon handed over to the operating department. It is true that this was merely a trial train, carrying the leading officials and guests of the New York Central Railroad, and that it

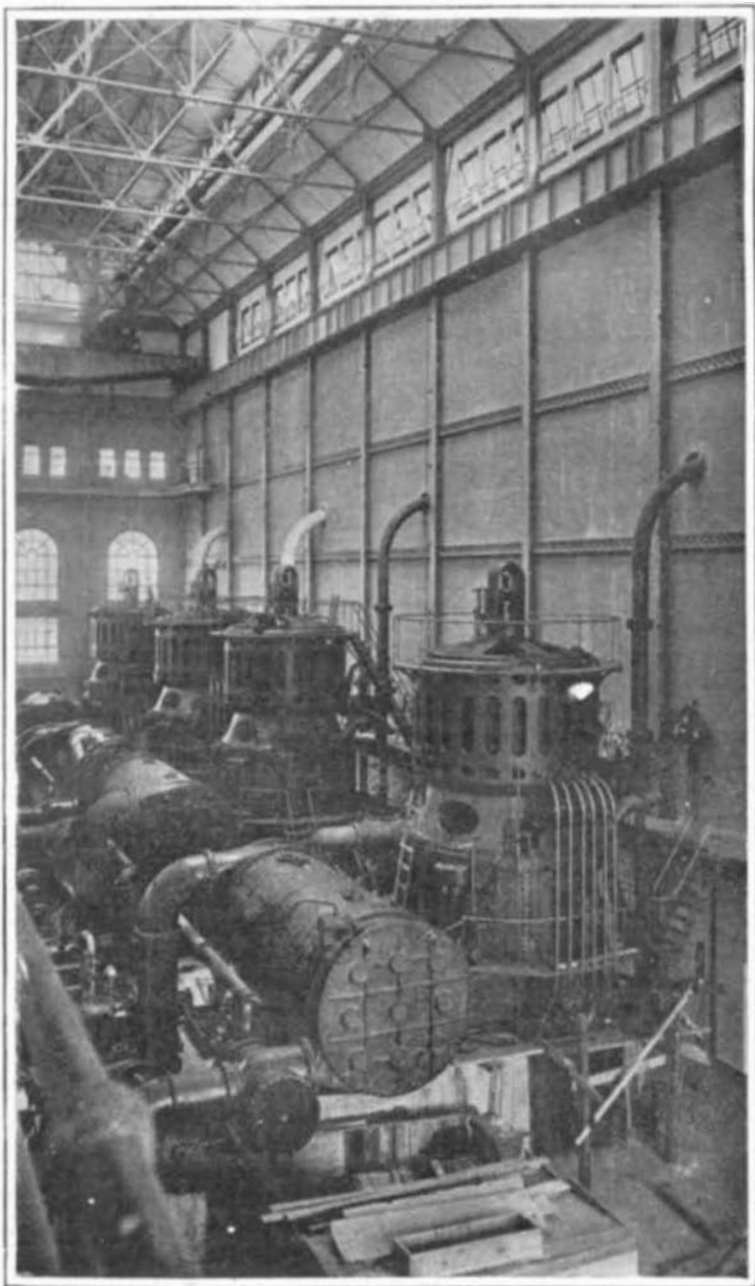


Northeasterly Portion of Grand Central Yard, Showing Sub-station, Express Level, and Steelwork Erected Above Suburban Level.



The tracks are built within the concrete structure, and the station is placed transversely above it. The sloping approach in the foreground is the unfinished street, which is to be carried over the tracks.

#### The New Highbridge Station.



This power house and that at Yonkers are built in duplicate; each will have sufficient capacity to operate the whole electric zone.

#### Interior View of Port Morris 40,000-Horse-Power Power House.



full width, 140 feet, of Park Avenue. This provides for ten parallel tracks, which will be continued down to Fiftieth Street, where they will diverge into the main yard, and occupy the space from Lexington Avenue to within 100 feet of Madison Avenue, as far down as Forty-third Street. From Forty-third Street to Forty-second Street the station ground will be bounded by Vanderbilt Avenue on the west, and by Depew

and a large brewery. The excavation involved some heavy underpinning to these buildings, all of which has now been completed and faced with the heavy I-beams and concrete retaining wall, illustrations of which have been given in our previous articles on this work. The steel work which carries the upper level has, most of it, been put in. The work is being carried forward so rapidly that the whole of the open

all ready for operation within a few weeks' time.

The rolling stock equipment for the electrical service will consist of 95-ton electric locomotives of 2,500 horse-power. This is 1,000 horse-power greater than that of the most powerful express steam locomotives of the New York Central Company. The locomotives will be used for hauling express trains between Forty-second Street and Croton Landing. The suburban service will be operated by all-steel motor cars, similar to those developed on multiple-unit, urban, rapid-transit railways. Each car will seat sixty-four persons, is equipped with two motors, lighted and heated electrically, and in the summer will be ventilated and cooled by electric fans. The belief that the new service will be marked by all those well-known advantages that come from the use of electric traction was verified during the trial trip of the special train, referred to at the opening of this article, when the freedom from jolt in starting and the rapid acceleration and general smoothness of running were very noticeable.

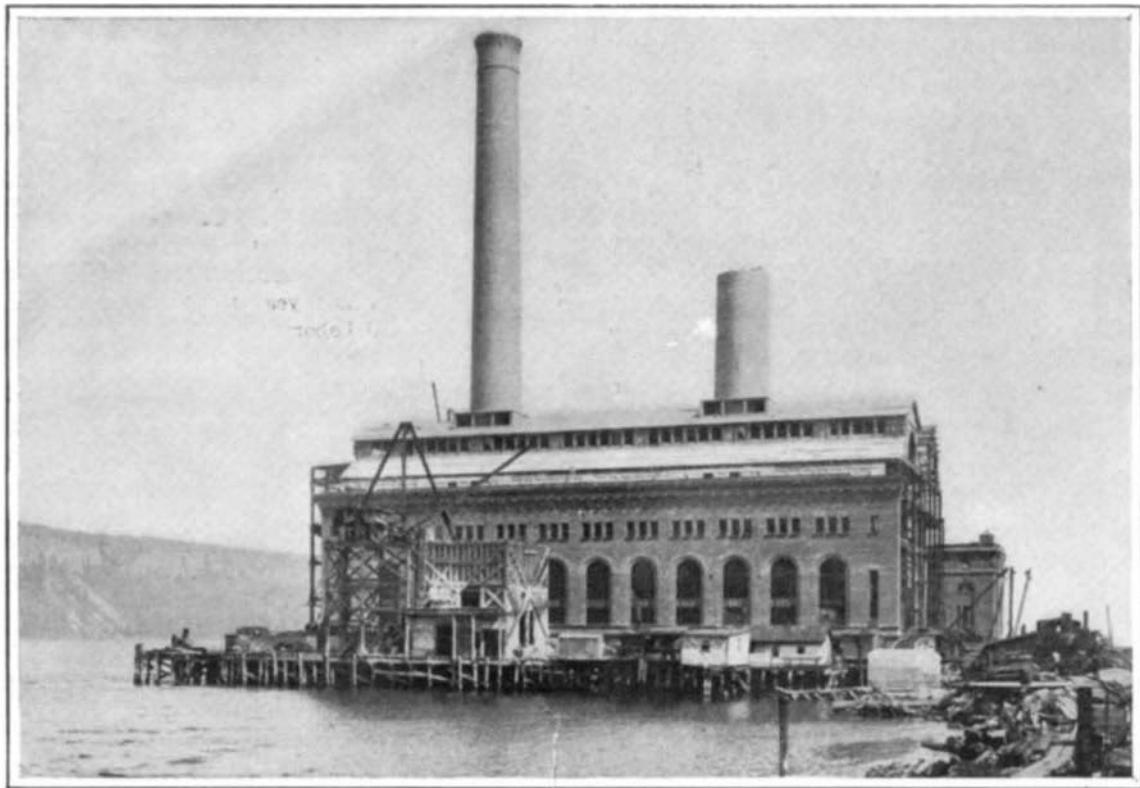
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traffic, a monopoly was obtained from the District Council.

The type of electric towing locomotive adopted comprises a front truck, each of the axles of which is driven by a series motor of 8-horse-power permanent output, with 800 R. P. M. at 550 volts, its operation being effected through a double toothed-wheel gearing. At the back there is a freely-moving axle. The underframe carries a horizontal shaft on which the towing pole is carried vertically and operated by means of a 3-horse-power motor with spur wheel gearing and screw and nut drive. The towing rope is wound up on a drum operated by a 3-horse-power motor through worm wheel gearing, which is connected to the shafts by means of a friction clutch, the springs of which are so adjusted by hand as to have the drum turn round the shaft, the rope being gradually disengaged from the drum as soon as a pull of 1,200 kilogrammes is exceeded. As in starting a pull of about 2,000 kilogrammes (4,400 pounds) is required to deal with a fully-loaded 600-ton barge, the rope is accordingly disengaged gradually, thus avoiding any violent shock. The weight of the locomotive is 7,500 kilogrammes (16,500 pounds). Its design is entirely different from that of the experimental locomotive used in connection with the Finow Canal trials, its output being moreover considerably higher, while even the auxiliary operations are carried out by the aid of electricity.

The current operating the locomotive is branched off behind the lightning arrester and induction coil and goes on, first, to the motors serving to lift the towing pole; second, to the motors operating the rope winch; third, to the electric lighting system; and finally, through a fuse and self-acting switch-out, to the controller of the two traveling motors. The locomotive has been designed for conveying two standard barges with an aggregate useful load of 12,000 pounds at a speed of about 4 kilometers (2½ miles) per hour, or four Finow barges with about 8,000 kilogrammes (17,600 pounds) at a speed of 4.5 kilometers (2.8 miles).



Yonkers 40,000-Horse-Power Power House on the Hudson River. The Engine Room Will Contain Six Curtis Turbo-Generators.

Place on the east. Both the station and the yard will be built on two levels, the upper level being devoted to express tracks and covering practically the whole of the area above described, the lower level being reserved for the suburban trains. Of the four tracks in the Park Avenue tunnel, the outer two, which will be reserved for incoming and outgoing local trains, will lead to and from the suburban level by means of two inclines built on a two per cent grade.

The terminal station will be a monumental structure, with a frontage of 300 feet on Forty-second Street, and 680 feet on Vanderbilt Avenue. All of its accommodations have been planned on a vast scale, with a view to meeting the future increase of traffic. The ticket lobby will be 90 feet wide by 300 feet in length, the grand concourse 160 feet wide by 470 feet in length, with a clear height from floor to ceiling of 150 feet. To the north of the station building and over the tracks will be erected a vast office building, of the same architectural characteristics as the main station building, and with sufficient accommodation for the officials and the army of professional and clerical employees of the company.

In order to meet the requirements of the city as to restoration of the streets, the whole of the upper or express level of the station and yard is being lowered 15 feet below the present track level, and the suburban tracks will be 20 feet below this, or 35 feet below the present level. This, however, does not represent the vast amount of excavation that is being done; for within the area of the new yard was included much ground that extended considerably above the average level of the old yard. The total amount of estimated excavation is 2,000,000 cubic yards, and of this over 25 per cent has been taken out.

The work which has been done to date at the terminal has consisted of the widening out of the yard entrance to the full width of Park Avenue, and the excavation of the easterly portion of the express and suburban station yard. At present, practically all of the east side of the 43-acre upper yard has been carried down to its final grade at an average depth of about 30 feet below street level, and excavation is now being done at a depth of 50 feet below the street on the 20-acre low-level yard. The company is completing this easterly portion of both upper and low-level yards first, and building a temporary station beneath the Grand Central Palace, with a view to shifting the traffic over to this portion of the yard and operating it electrically. The excavation of the central portion of the yard and the construction of the main station will then be carried on, and when this is completed the westerly section will be attacked.

The approach to the temporary station and the upper and lower yard levels is shown in two of the accompanying photographs, one of which is taken looking north, and the other south. The tracks which lead from the tunnel to the yard extend on a falling grade past a series of large buildings to the east of Park Avenue, among which are the Steinway factory

cut, shown in our view of the excavation looking south, has been roofed over since the photograph, a very recent one, was taken. The yard is bounded along its easterly side by a heavy concrete retaining wall of an average height of 21 feet, and this wall extends from the Grand Central Palace to the large sub-station known as No. 1, which forms the background of the accompanying view of the station yard looking north. The sub-station consists of two buildings in duplicate, with a 30-foot opening between them at the center. Each building is 200 feet in length by 40 in width and 100 feet high, and here will be housed the transformer and converter plant for the use of the yard and tunnel.

The most advanced portion of the work is the construction of the two power houses, each of about 40,000 horse-power capacity, one at Yonkers, and the other at Port Morris. At present each of these is being equipped with four Curtis turbine generators; and there is provision for two other units in each of the plants, making in the two stations a combined capacity of over 80,000 horse-power. The Port Morris station is complete and ready for operation. That at Yonkers is in an advanced stage of construction, and will be



View of Excavated Easterly Portion of Grand Central Yard Looking South, Showing Suburban Level and Steelwork for Carrying Upper Express Level. The Retaining Wall to the Left Fronts on Lexington Avenue.

PROGRESS OF THE NEW YORK CENTRAL TERMINAL IMPROVEMENTS.

As the canal traverses two extensive lakes on which the use of electric towing locomotives was out of the question, propeller operation had to be resorted to on these sections. Several solutions of this problem were tried; viz., first, an electrical three-screw towing barge deriving its energy either from an accumulator battery carried on board or from two different types of trolley wire; second, an alcohol-operated barge; third, a suction gas boat of the Körting system; and finally, a towing steamer, the boiler of which was fired by means of coal-tar oil.

The economical results of the experimental service failed to warrant the adoption of the electrical barge, in spite of the obvious advantages of electric operation. It is, however, contemplated to continue these trials, and eventually to adopt this interesting system of towing on the two lakes. For the moment, the current consumption is about three times higher than in the case of the locomotives. The alcohol barge was found to be quite impracticable, while experiments begun on the suction gas towing barge had to be temporarily discontinued in view of the inefficient design of the motor. The ordinary towing steamer was, however, found to be quite satisfactory. Its fireplace, designed on the Körting system, consists mainly of a nozzle in which the oil, having been pulverized under pressure, is thrown out in a fine veil. A smokeless combustion and most economical fuel consumption is insured by fitting a preheater, while the boilers are equipped with superheaters. The consumption of heating oil was found to be about 0.5 kilogramme per horse-power-hour.

#### Alcohol from Corncocks.

The Department of Agriculture is developing a new industry in the production of alcohol from corncocks, which, the Department says, promises to be of much commercial value. Investigations are being made at Hoopston, Ill., and have proved that the large quantities of corncocks which every year go to waste can be made to produce alcohol in sufficient quantities to justify the erection of a distilling plant in connection with a corn cannery.

So far the Department has succeeded by simple methods of fermentation in getting a yield of 11 gallons of alcohol from a ton of green cobs, and, by similar methods, in getting 6 gallons of alcohol from a ton of green cornstalks. A Department official says that these tests show that there are 240 pounds of fermentable substance in a ton of green field cornstalks, which will yield about half of their weight in absolute alcohol. In round numbers, a ton of stalks will produce 100 pounds of alcohol or 200 pounds of proof spirits. As a gallon of alcohol weighs nearly 7 pounds, there should be 15 gallons of alcohol in a ton of stalks. The addition of the corn on the cob adds further to the possibilities of alcohol obtainable from a ton of cobs, and will have its influence in bringing the quantity to a greater figure.

#### Radio-Activity and Purity of Springs.

There are known to be springs that, while issuing from fissured and cracked soils and which hence would seem fated to contain microbes, contain scarcely any of the latter; particularly is this true of bacilli coli

communis, which indicate a contamination by fecal matter and cause typhoid fever. The springs of Avre are to be classed with such water sources, and two chemists, Messrs. Dienert and Bouquet, accordingly investigated the springs. The result of their researches has been communicated to the Académie des Sciences. It would seem that there is some connection between the purity of a spring and its radio-activity. The springs of Avre are all radio-active; the purest of all, that of Breuil, is more radio-active than the others. It may be, therefore, that pure springs owe their poverty in microbes to their radio-activity. Is this the indication of a possible method of purification of waters? At all events, there might be a supplementary means of assuring ourselves of their harmlessness to the public health.

#### Official Study of Earthquakes.

A state institution for the study of earthquakes was founded last year in connection with the Hamburg Physical Laboratory. The institution has been erected at the cost of a private citizen of the town, and has recently been opened. It corresponds with 245 other institutions of a similar character in various parts of the world, and more especially with the German Imperial Central Earthquake Institution at Strasburg in Alsace.

Experiments are being made at the Auszenjade Lightship with a bell fixed beneath the surface of the water, to ascertain how far sound signals interfere with one another.

#### RECENTLY PATENTED INVENTIONS.

##### Of Interest to Farmers.

**DRAFT APPARATUS.**—H. JOHNS, Troy, Pa. In this case the invention is an improvement in draft apparatus designed for immediate use for all kinds of hitching on farms, in lumber woods, or elsewhere where it is desired to readily connect the timber with the load. The construction is simple, easily applied, and can be adjusted for use in almost every location where a draft apparatus of the sort is desired.

**CLEANER FOR DISK HARROWS.**—A. C. GAYLORD, Galesburg, Ill. The invention refers particularly to that class of disk harrows in which the disks are arranged in gangs and are provided with individual scrapers by which the earth and trash accumulating upon the disks is removed, its object being to produce a device which shall be efficient and one in which the scrapers can be adjusted to meet varying conditions.

##### Of General Interest.

**RECORD KEEPING SYSTEM.**—M. D. POLLOCK, Decatur, Ill. The principal object of the invention is to provide a ledger or permanent record line on a suitable portion of a series of original bills or record slips, said slips serving as the permanent ledger record. A convenient system of filing the record slips is provided in such a way that the desired record which is usually posted in a ledger can be set up in ledger form without rewriting it, and so that it will appear in regular order as posted from time to time. It is, therefore, unnecessary to make any copy of the record in posting, this being done by moving the original bill or record slip from the bill pad to the desired ledger pages or files. An index guide is also provided for each page or file.

**UMBRELLA STAND.**—T. L. MONAGHAN, New York, N. Y. In the present patent the object of the invention is the production of an umbrella stand which is simple of construction and which will enable umbrellas to set conveniently therein with the tips uppermost, which facilitates the draining of the water toward the handle.

**VALVE ATTACHMENT FOR FOUNTAIN-PENS.**—F. O. CONILL, New York, N. Y. The principal object of the invention is to provide a device which can be applied to ordinary pens without changing any of their existing parts, and which can be removed from them to permit the pen to be put together without the valve and not necessitate the use of any additional parts or the modification of the existing parts of the pen.

**DENTURE.**—R. M. CRAIG, Dennison, Ohio. One purpose of the inventor is to provide a porcelain tooth or facing so shaped that the backing can be quickly and conveniently applied thereto and readily set to the tooth in such manner as to be a fixture therein and wherein the backing when in position will be hidden from sight at the front of the body.

**PORTABLE GRAIN-SPOUT FOR ELEVATORS.**—G. W. BAIER and C. D. BAIER, Cissna Park, Ill. In this patent the invention is an improvement in the class of grain spouts or conductors which are adapted to telescope and to be adjusted or placed at different angles or inclinations, so as to deliver grain into different bins or receptacles as conditions may require.

**WALL CONSTRUCTION.**—J. G. VON HOF, New York, N. Y. This invention has reference to a wall construction especially adapted for use with concrete veneered walls. The principal object of the invention is to provide means whereby building-blocks can be readily

and permanently attached to the surface of a wall formed of continuous masses of concrete or other plastic material.

**SHELF.**—PAUL STEEG, Danzig, Germany. An essential part of the invention consists in the means employed whereby each shelf is clamped at any desired height upon the columns by the weight of the shelves and that of the load resting on the same. The shelves are suspended from above, each one being supported by the means employed for clamping it. By this arrangement the center of gravity of the loaded shelf is situated below the place where the clamp is situated.

**JEWELRY CASE.**—H. W. SMITH, Newfield, N. J. This improvement is in cases for holding and displaying necklaces or other chains, the object being to provide a device that will be neat and attractive in appearance and so constructed as to firmly hold on its outer side the portion of a chain to be displayed and having a chamber for receiving the surplus portion of the chain.

**APPARATUS FOR THE PRODUCTION OF CARBURETED AIR.**—A. PERRIER, 47 Place St. Michel, Marseilles, France. The apparatus is located in a cabinet and comprises a device for forcing atmospheric air into a container, the device being operated from a motor within the cabinet. An air collector relieves the air of impurities and from it the purified air is conducted to a heater within the air tank. Heated air is conducted from the latter to carbureter boxes, and means supply each box with a hydrocarbon fluid with which the air is saturated to form a gas. This fluid is supplied to a distributor, and the gas formed in the boxes is collected in a receiver, whence it is conducted to a gas-holder and thence through a conductor to any place for consumption or utilization.

**BARREL CARRIER.**—J. FRAVEL, Dayton, Ohio. The invention pertains to package-carriers; and its object is to provide a carrier arranged for convenient and quick attachment to one or two barrels, to enable a workman to readily carry two empty barrels with the use of but one arm and hand, and to permit two workmen to carry a filled barrel with ease.

**JUVENILE SAVINGS-BANK.**—W. G. HOLMES, New York, N. Y. The invention has reference to toy money-boxes; and its object is to provide a juvenile savings-bank which is simple and durable in construction and exceedingly ornamental and arranged to stimulate saving by constantly reminding children and other persons of a home that may be owned if money is saved.

#### Hardware.

**DOOR-LOCK.**—J. H. SIMMONS, Talmo, Ga. The objects in this invention are to provide a lock that may be adjusted for either the right or left hand side of a door, that may be used as an automatic latch which may be opened by either knob, and that may be used as a lock operated from the inside knob, and locked from the inside of the door without a key, but which cannot be unlocked from the outer side excepting with a suitable key.

#### Household Utilities.

**FLY-ESCAPE.**—A. W. SALOKAR, Lewiston, Idaho. In this instance the improvement refers to a device adapted to permit flies readily to escape from a room or other inclosure and to prevent them from entering at the same point. The invention may be attached to a window-screen or applied to any opening independently of a screen.

**TABLE-SYRUP.**—V. M. BACA, Denver, Col. This new food compound is in the form of a

table-syrup designed for use on griddle-cakes and the like; and it consists in a new product of a very palatable character and high dietetic quality and one which also has a certain therapeutic value, there being no hurtful mineral ingredients and no low-grade adulterants.

#### Machines and Mechanical Devices.

**STAIR-ROUTING MACHINE.**—S. P. WOOLF, Omaha, Neb. Supporting-frames being clamped upon a stringer, the carriage is adjusted, and the brace-chuck applied to the upper end of an inclined shaft. Pressure of the shoulder against end of the chuck tends to drive the bit forward, exerting a downward force thereon to hold it more firmly in the groove it cuts. In a five point bit, the cutters slant from the bottom upward and incline toward the shaft and the lower edge of each cutter is a point standing at approximately a right angle with the cutter. Points cut the grain of the wood in advance of cutters and when one cutter just leaves work the succeeding one is at full cut, the third just entering.

**ART OF MAKING BUTTONS.**—W. S. WATSON, Memphis, Tenn. A circular or other kerf is formed in the shell and simultaneously the shell bounded by the kerf is dressed to form the face of the button. The kerf is of depth equal to or greater than thickness of button. After these operations a portion of the back of the shell is ground away or otherwise removed, forming a cavity therein extending along a plane surface and extending through to the kerf first made. Thus the button is simultaneously separated from the shell and the back of the button dressed. The button is now formed excepting the thread-holes, which are drillable at any time and in any desired manner.

**JOURNAL-BEARING.**—F. LATULIP, Syracuse, N. Y. Rubbing surfaces of mica set edge-wise to the revolving surfaces are employed. Mica has been heretofore employed but not with satisfaction on account of difficulty of retaining and holding in place the thin laminae of mica whose smooth surfaces slip upon each other. The invention consists in the arrangement of the blocks of mica sheets and treatment of same designed to secure coherence of the sheets and unity of the blocks as a composite structure.

**PACKING APPARATUS.**—A. L. HOLTON, Norfolk, Va. The invention relates particularly to apparatus such as covered in Mr. Holton's former patent, and comprising a counting device and means operated from the same for delivering separating-strips to separate a pile into desired divisions; and the present invention relates to certain parts designed to secure the delivery of the strips in a purely mechanical way and without the necessity of any electrically-operated devices.

**SHIFTING DEVICE FOR TYPE-WRITING MACHINES.**—J. B. SKEEN and J. M. GRAFTON, San Francisco, Cal. This invention relates to a device to be applied to type-writing machines which have a single keyboard requiring the operation of one or more shifting-levers in order to provide for printing the upper and lower case characters. The device operates these levers by a simple movement of the knee, thereby leaving the left hand free for manipulating the keys and securing those advantages at small expense and little attention to the operating parts.

#### Pertaining to Recreation.

**AMUSEMENT DEVICE.**—E. H. LANIER, Memphis, Tenn. In operation the cars are pushed out of the chute and start toward the

bottom of a platform and are engaged by obstructions and deflected here and there, meeting other obstructions, until they reach the bottom. The circular form of the cars and peculiar arrangement of wheels permit the cars to revolve or run in any direction without overturning. Padding prevents injury to the occupants, and the incline angle permits the cars to descend gently, so that contact with the posts will be gentle, but still sufficient to cause the car to rebound with its passengers.

**AMUSEMENT APPARATUS.**—F. W. THOMPSON, New York, N. Y. An object of this inventor is to provide a device in the form of an inclined chute or slideway down which a person may slide with increasing momentum from top to bottom, with pleasurable excitement without danger of injury. Another object is to construct a slideway of a material having inherent and lasting slipperiness or smoothness, thereby obviating the use of polishing substances.

**GAME.**—O. HENRICHSEN, New York, N. Y. The purpose of the invention is to provide a game by which many and varied situations may be brought about with respect to one or more movable objects employed in playing the game, and, furthermore, to so carry out the main features as to render the game of physical benefit, the tendency being to expand the lungs when the player is in action.

#### Pertaining to Vehicles.

**WHIFFLETREE-HOOK.**—J. G. MYERS, Mancos, Col. The snap-hook comprises a tongue having at its butt the eye for a bolt connection, at its point end a laterally-extending and transversely-curved head-plate, and in advance of its butt-eye an upwardly-projecting lug and the hook pivoted at its butt-end to the lug, extending thence forwardly over the head of the tongue and turned beneath the head with its point bearing in the hollow.

**CUSHION-TIRE FOR VEHICLE-WHEELS.**—L. H. BARRY, Durango, Mexico. The inventor employs a wheel rim or felly of special construction in direct association with the outer face of which he employs a set of directly-adjointing metallic springs together with means for securing the same to the rim. Connected to the springs are metallic springs of another set also of special construction and directly adjoining each other, combined with which are means for connecting them together continuously about the circumference of the rim by which to derive the direct cushioning effect as well as a uniform tread.

#### Designs.

**DESIGN FOR RUBBER MATTING.**—A. J. WHISLER, Goshen, Ind. Mr. Whisler has designed a rubber matting, involving parallel rows which are striped diagonally in reverse direction, giving the pleasing effects of contrasting shades, and having longitudinal ornamental borders at its opposite edges.

**DESIGN FOR A FINGER-RING.**—J. L. HERZOG, New York, N. Y. This inventor has secured a design patent for an ornamental finger-ring. In the front of the ring the heads of two animals with wide open mouths touch. On their lower teeth rests a precious stone. The band of the remaining part of the ring is plain.

**NOTE.**—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.