

was a natural enemy of the bees. Bruin was always seeking to satisfy his love for honey, and would rob hives of wild bees fearlessly. Other natural enemies of the bees are ants, kingbirds, mice, skunks and toads. It is not an unusual sight to see a toad sitting in front of a bee-hive and swallowing the bees as fast as he can catch them coming out.

It requires some 20,000 bees to make a pound of honey in a day. Honey, as we all know, comes from very many different flowers and plants. It is obtained from white and red clover, sunflower, buckwheat, fruit blossoms, basswood blossoms, dandelion, goldenrod, and even blossoms of the turnip. In the West, alfalfa is found to be a great honey-producer. The flower of alfalfa resembles much our sweet clover blossoms of the East. The cacti of the West is also a honey-producing plant.

In gathering honey from these sources the bee uses its wonderful tongue, the anatomy of which would

They are not the first to puncture a grape, although, because of their conspicuousness on and about grapes, they are often blamed for so doing. It is oftener a bird that first attacks fruit. The bee then seeks honey through the opening thus made.

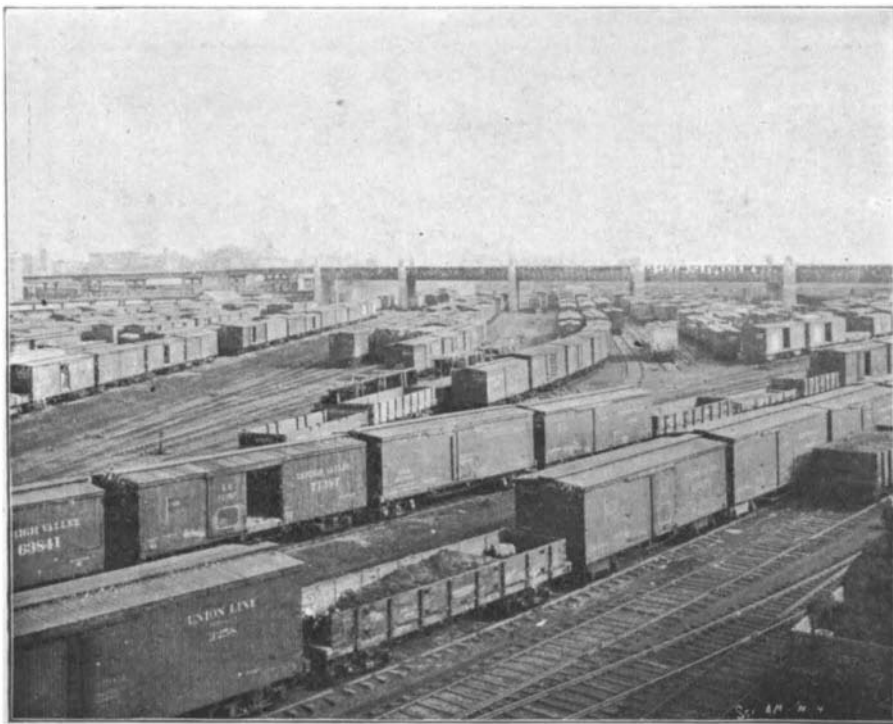
Bee-keeping nowadays has resolved itself to a science, and, in many sections of the country, an extensive industry. There has been a very marked evolution since the time when bees and honey were to be found in the woods only. Modern inventions and genius are to-day assisting both the bee and the apiarist. The annual consumption of honey in the United States aggregates nearly 125,000,000 pounds.

RAILROAD FREIGHT HANDLING IN NEW YORK CITY.

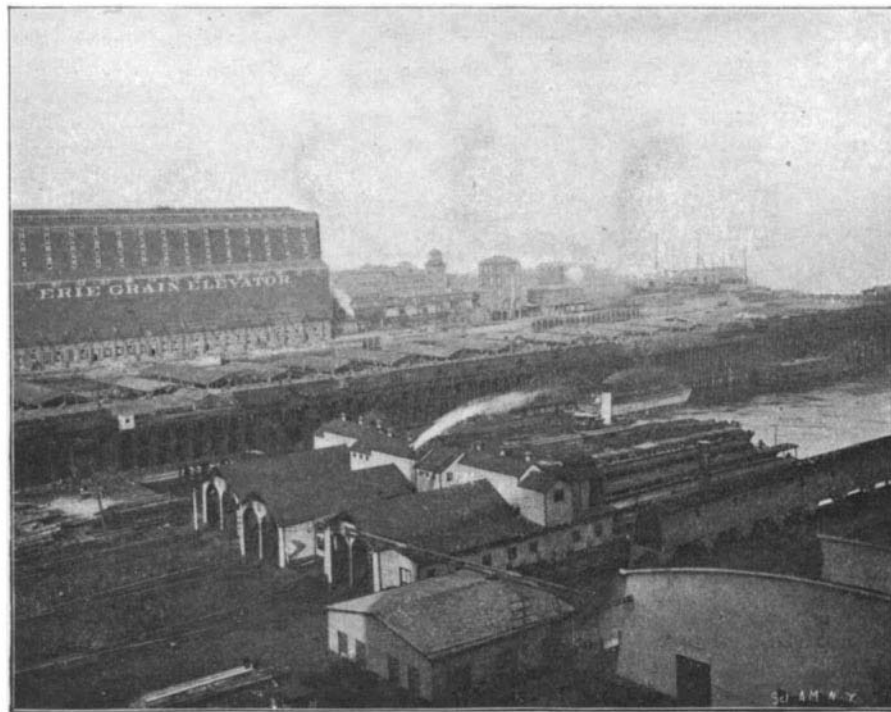
New York city is the only prominent port in the world where freight cannot be delivered directly from the railroad to the ship, or *vice versa*. The deep, broad body of water which surrounds the island of

road to another. A number of lighterage companies have been formed which do the lighterage for the railroads.

Many lines, however, do their own lighterage. One of the best equipped railroads for this branch of the work is the New York, New Haven & Hartford Railroad. This road does an enormous business in transporting raw material from the West and South into New England, and in the subsequent return of the same material manufactured into the finished article. All this through traffic must be transferred around Manhattan Island. It is essential, therefore, to the life of the road that its tugs and floats should be among the largest and best in the harbor. The company owns a great number of floats, three of which are the largest on the river, having a capacity of twenty-two cars each. The tugs are also very powerful, some of them being fully capable of handling singly a pair of the twenty-two-car floats. The fast freight,



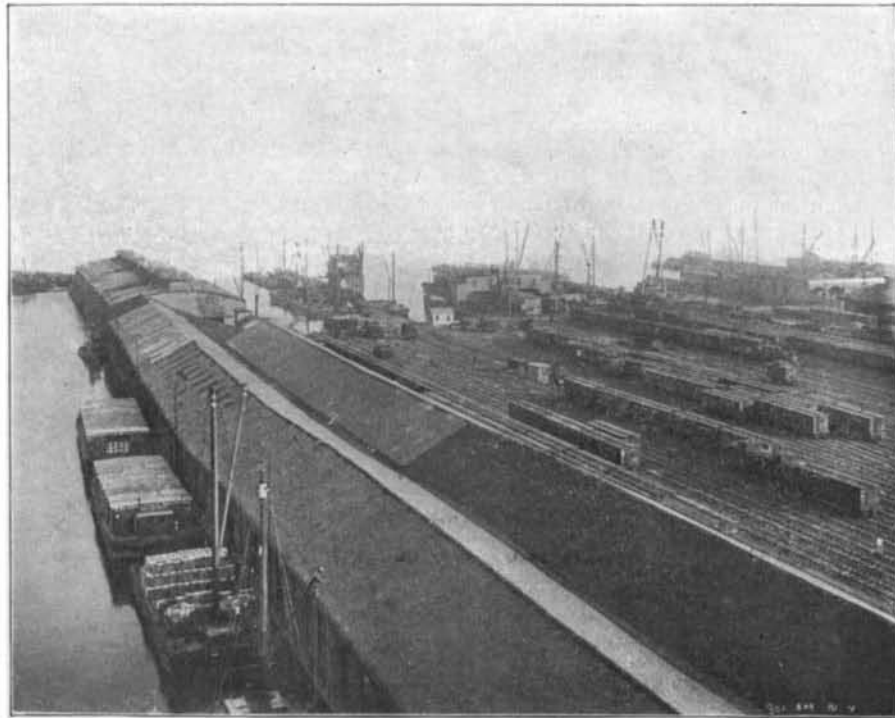
The Harlem Yard of the New York, New Haven and Hartford Railroad.



The Berwin-White Coal Pier and the Erie Grain Elevator.



Upper Jersey City Yard of the Pennsylvania Railroad.



Lower Jersey City Yard of the Pennsylvania Railroad.

RAILROAD FREIGHT HANDLING IN NEW YORK CITY.

form an interesting day's study for any student of the insect and animal world. The bee has a true stomach and a honey-stomach. In the honey-stomach the nectar is separated from the pollen, the pollen being cared for by the true stomach. In the study of the bee's anatomy it will also be found to possess a brain and a nervous and a respiratory system. Its compound eyes are alike wonderful. In comparing its ills to those of man it may be noted, for example, that the bee suffers from paralysis. Remarkable, too, it is that the bee makes a product which no manufacturer can duplicate, at least as far as putting it in combs and capping it is concerned.

There is a common belief abroad that when a bee stings it soon after dies. This nowadays is generally discredited, though in some instances bees do die from this cause.

It has been claimed that fruit and bees cannot exist in the same farmyard, but this is false, a fact illustrated in one of the accompanying photographs. Bees are not the enemies of whole and perfect fruit.

Manhattan affords excellent wharves and docking facilities, but at the same time cuts off direct connection with the railroads. Of the ten trunk lines which deliver goods at this harbor, only one enters this city, the other nine having their terminals on the Jersey shore. Thus, the greater portion of the freight is received in Jersey City and shipped from New York, while Brooklyn is used as a warehouse in which the goods are stored. This unique state of affairs has developed an elaborate system of lighterage and "floatage" peculiar to this harbor.

In earlier times warehouses were built on the Jersey side of the North River, and freight was transferred by lighters to and from piers on the New York side. This system, however, was replaced by the present one, in which the loaded cars themselves are ferried over on floats and their contents delivered to steamer or wharf without landing the car. The cars are thus transported to Brooklyn also, where the freight they carry is stored in the warehouses. Another branch of the work is the transfer of freight from one rail-

however, is carried by two steamers, "Express" and "Maryland," which make the trip down the crowded East River, around the Battery and across to the Pennsylvania yards, a distance of 12 miles, in the exceedingly short time of 52 minutes. The steamers are both modern steel vessels, provided with electric steering gear. The "Maryland" is fitted up with a fine dining room, for in addition to her freight duties she carries daily two passenger trains, the Federal express and the Colonial express. Aside from the through traffic, however, local freight forms a large part of their tonnage. The Berkshire milk arrives at the Harlem River terminus every night at 10 o'clock, and the fish train at 1:30 A. M. Of the four yards, the one shown in the illustration is situated in the very heart of the piano industry, consequently a large part of the freight here handled consists of pianos, which are shipped daily into New England in great numbers.

But aside from the subject of lighterage, it will be interesting to look into the method of handling cars,

preparatory to floating them. The most up-to-date method of drilling cars is in the use of the gravity system. This is well illustrated in the two Jersey City yards of the Pennsylvania Railroad. The tracks which enter the upper yard are elevated in order to avoid grade crossings in the city, and this elevation forms the starting point for an incline which leads down through both yards to the water front. The incoming freight trains are halted at the top of this incline, and there the work of the drilling engine begins. The engine and a "poling" car connected to it run on a track parallel and adjacent to the freight train. The poling car is a flat car on which a lever or "pole" is mounted. The pole is arranged to swing laterally, and is under the control of a conductor, who rides on the car. The conductor, who has a list of the cars and the destination of each, guides the pole against them consecutively, whereby they are given a start down the incline. Each car is controlled by a brakeman, or "rough rider," as he is called, who receives his instructions from the conductor, and who, by certain gesticulations and signals, makes known to the switchmen along his course which pier he is bound for.

A large portion of the upper yard is occupied by the coal traffic. The modern large, steel gondolas are too heavy to be carried loaded beyond tidewater. They are consequently run out on the Berwin-White pier shown in one of our illustrations, and their contents dumped into barges or lighters, which convey the coal to its proper destination. These two yards, however, are insufficient for the immense freight traffic of the Pennsylvania Railroad. A large yard nearly two miles long is situated on the Jersey Meadows near Newark, and here also the gravity system is used.

The grain trade forms a large part of New York city's freight traffic. One of our views shows the Erie grain elevator at Jersey City. Cars loaded with grain are run into the elevator and unloaded, their contents being weighed and placed in bins according to grade. The consignee is then notified of the arrival of his grain, and, at his order, the railroad company lighters it free of charge to any vessel or delivery point in the harbor.

An interesting feature of the Erie freight traffic is the fruit auction carried on daily in their New York depot. The Erie Railroad makes a specialty of California fruit, bringing in oranges and grape fruit in great quantities during the winter, and in the summer-time plums, peaches, grapes, etc. In order to increase this business, the company provides an auction room where the fruit is auctioned off to jobbers and owners of fruit stands. Thus in certain seasons an average of thirty carloads are disposed of daily.

It would be impossible to give a detailed description of every trunk line entering the city, and its individual capacity and method of handling freight. This article is designed to give the reader merely a general idea of a subject which, though very interesting, is nevertheless too little known by the general public.

The pension roll at the end of the last fiscal year included more names by 4,206 than at the corresponding date the year before, says Bradstreet's. The list included 907,735 names on July 1 last. There were added to the rolls during the year the names of 44,225 new pensioners, while those of 3,567 were renewed and restored. In all, 43,586 names were dropped, of which 38,152 were in consequence of death. As a result of the war with Spain 5,604 names were added. The total amount disbursed was \$131,568,216. Attention is directed by Com. Evans to the unsatisfactory circumstances attending the medical and legal adjudication of claims for pensions, and he makes some recommendations looking toward improvement which are deserving of consideration. One feature of the proposed plan is the constitution of traveling medical examining boards not affected by local interests.

THE BAKER ELECTRIC RACING AUTOMOBILE.

An apparent confirmation of the old superstition that accidents occur in threes is to be found in the fact that within the past month there have occurred an explosion on the submarine boat "Fulton," the destruction in mid air of the airship "Pax," and the demolition during a speed trial of the Baker electric racer, illustrations of which we give herewith. By these three accidents, submarine navigation, aerial

charges necessary to attain high speeds. The cells were assembled in eight crates, six of which contained five cells, and the other two, four and six respectively. Two five-cell crates were placed longitudinally of the vehicle at the front end, one being on each side of the inclined steering post; three were placed at the back and sides of the operators' seats, in the shape of the letter U; and the remaining three were set transversely, one between the motor and the rear axle, and two behind the latter.

The machine was steered by a 7-inch hand wheel mounted on an inclined steering pillar, at the other end of which was a 4 or 5-inch drum. Three 3-16-inch transverse wire cables were wound once around this drum and had their ends fastened to horizontal bolts that passed through holes in two vertical uprights on the rod connecting the steering-head arms. The bolts were pressed outwardly by small, stiff springs, which were intended to keep the cables taut enough to properly steer the wheels.

Mr. Baker covered his racer with a light, torpedo-shaped superstructure of wood and black canvas, which completely hid the occupants of the car, who saw to steer through a small isinglass window. In order to minimize air resistance, even the wheels were covered with similar canvas or oil cloth.

The mile trials with the gasoline and steam machines had all been run off, and the latter were lined up for the kilometer speed tests, when the electric racer was started. The machine covered the kilometer, or the first six-tenths of a mile in 36 seconds, and was rapidly accelerating its speed. After making the one slight turn in the road which was just beyond the kilometer point, it was seen to swerve out to the opposite side. It then crossed the road again, reaching the

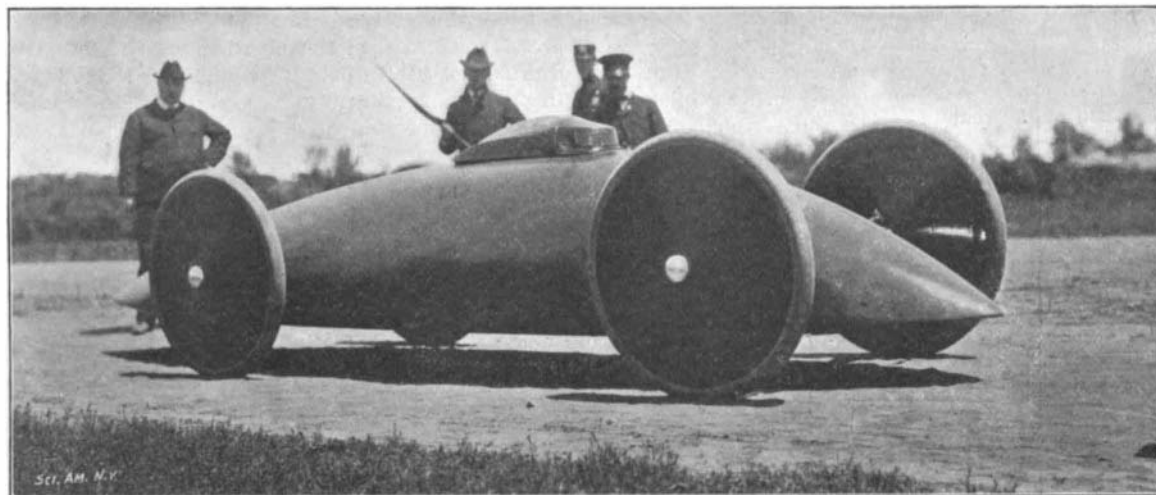
opposite side near the hospital tent, after which it again swerved to the right and struck the trolley tracks. This caused it to bounce up in the air so much that apparently all four wheels left the ground. When they touched again the powerful band brakes had been applied, one of them probably tighter than the other, for the machine skidded and whirled sharply around, smashing broadside on into the crowd of spectators. It stopped in the position shown in the diagram, with its nose pointing in the direction from which it had come. The body was knocked off, but the two operators stepped out unhurt. The two outer wheels were demolished, but the inner ones, as will be seen from the photograph, were not damaged. This would indicate that the tremendous momentum the vehicle had attained threw it upon its two outer wheels as it whirled around.

The accident seems to have been due to two causes. First, the roadbed was not smooth enough for the speeds that were attempted, and second, the steering gear of the racer was not as positive as it should have been.

The Automobile Club of America has decided to hold no more road speed tests of automobiles in the future, and it is to be hoped that the energies of its members will be devoted to the development of pleasure and commercial automobilism with the same zest that they have shown in developing and patronizing the racing vehicles.

Prof. J. C. Bose read a paper at a meeting of the Linnean Society, on electric response in ordinary plants under mechanical stimulus, and performed a series of experiments showing electric response for certain portions of the plant organism, which

proved that as regards fatigue, behavior at high and low temperatures, the effects produced by poisons and anæsthetics, the responses are identical with those hitherto held to be characteristic of muscle and nerve and of the sensitive plants. He drew the final conclusion that the underlying phenomena of life are the same in both animals and plants, and that the electrical responses which he had demonstrated are but the common physiological expression of these.



ELECTRIC RACING AUTOMOBILE BEFORE THE WRECK.

navigation, and the new method of locomotion on the earth's surface have each received a blow from which they will not soon recover. Of the last two accidents is this especially true, since each of them caused the death of two persons. In the case of the airship, the daring aeronaut and his helper were killed, while the automobile accident resulted in the death of two on-lookers and the serious injury of half a dozen others.

The Baker machine is the second electric racer of peculiar construction that has attempted to make a record on a straightaway mile course within a year. A machine constructed by Mr. A. L. Riker, and at the time illustrated in these columns, made a record of a mile in 1 minute 3 seconds at the Automobile Club of

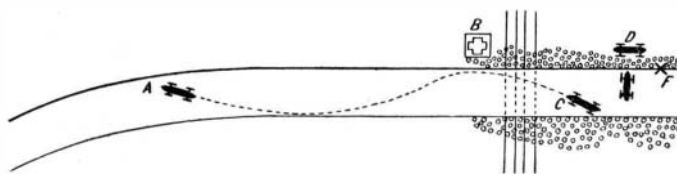
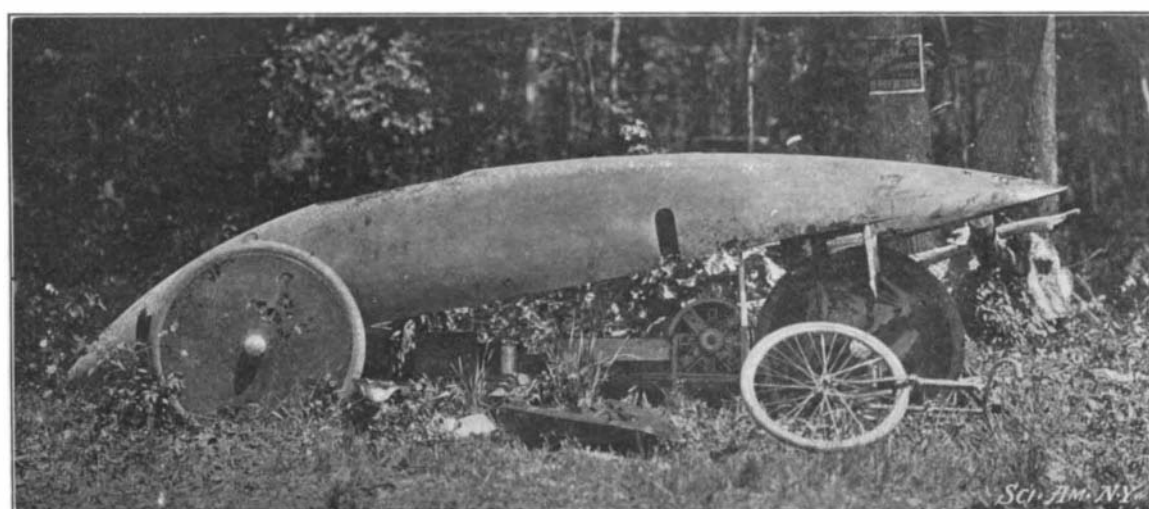


Diagram Showing Course of Automobile Just Before the Accident.

America's speed trials on the Coney Island Boulevard last fall. Mr. W. C. Baker, another pioneer in the electric vehicle field, and a skilled mechanic and electrician, constructed a second racer for the Automobile Club's speed trials on Staten Island, with the hope of making a new record. The machine was built on much the same lines as the Riker racer. It consisted of a stout angle iron frame, tapered inward slightly at both ends, with two low seats for the occupants in the center. A single electric motor behind the two men was geared by two chains to spring-mounted sprockets on the rear axle, to which were also fastened the band-brake drums. The frame was mounted on four 36-inch wire wheels with wood rims and 3-inch



AFTER THE WRECK.

pneumatic tires. The wheels and axles were sufficiently heavy and substantial to carry the 3,000 pounds of weight in the motor, batteries and controlling apparatus under ordinary running conditions. That two of them survived the strains of the accident speaks well for their staunchness.

The electricity to run the racer was furnished by 40 cells of Gould light-weight, lead-zinc accumulators, capable of giving for a short time the heavy dis-