

THE PROGRESS OF PRACTICAL AERONAUTICS DURING 1899.

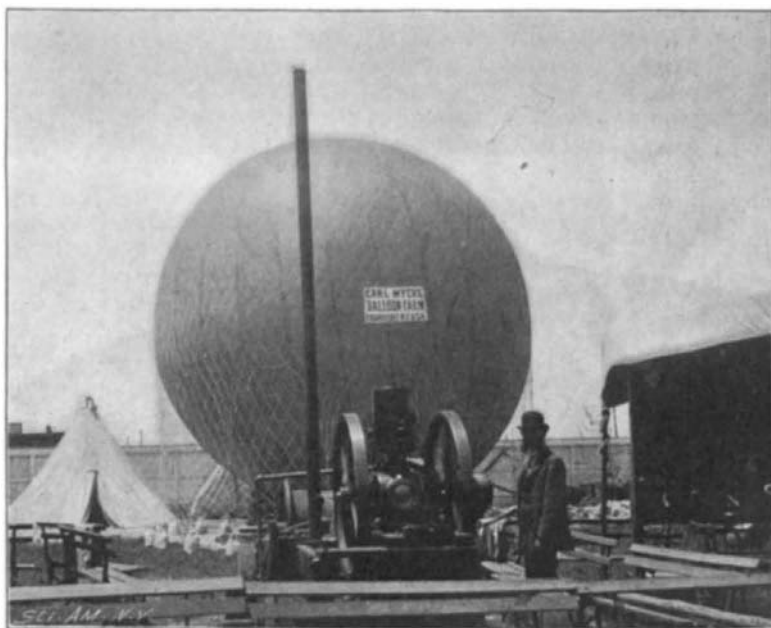
The year 1899 has not been marked in the United States by any great practical advance in actually navigating the air. The advance in the construction and use of aerial devices has been most interesting. We have been favored by Mr. Carl E. Myers, of Frankfort, N. Y., the proprietor of the "Balloon Farm," with some interesting details of the captive balloon which he installed at Coney Island and which consisted of a farm wagon on which was mounted a kerosene engine and windlass. This is, according to Mr. Myers, the only portable motor windlass for controlling a captive balloon ever built or used in the country, and our engraving gives an excellent idea of it. The motor was of 4 horse power, and the friction clutch pulley operating the windlass was arranged so that the power was multiplied. The 14-inch reel of the windlass held 1,000 feet of hemp cable, and the motor ran at 400 revolutions per minute, and the expenditure of kerosene was only about half a gallon per hour. The apparatus worked so well and was so simple that it appears to be a good type for future development for airship motor power. After the passengers had entered the basket, the balloon rose almost as freely as if cut loose, and in less than a minute rose to the extreme length of the cable, giving the aerial tourists exactly the sensation of a free balloon flight. With the aid of the friction clutch pulley and the friction brake the motion of the balloon was slowed down, stopped, and finally reversed, with no consciousness on the part of the passengers that such changes were occurring, and the windlass drew the balloon down in 3¼ minutes, thus making the round trip in five minutes, including change of passengers. As might be assumed, it was one of the most interesting attractions on the island. It was installed at Paul Boyton's "Water Park."

The balloon also proved of value for advertising purposes, and large opaque and translucent colored letters were separately attached to the balloon as readily as one might set type. They could also be read at night with the aid of a search light. To add to the attractions a close cluster of eighteen incandescent 20-candle power electric lights was next used, and a number of experiments were carried on to determine whether they were safe to use, and after it was thought there was no danger of igniting the gas, they were inserted in the body of the balloon. The cluster was hung from a central pulley within the sphere by an endless loop of braided cord, carrying it and the electric wire conductors. This necessitated the abolition of the usual interior valve cord, which was removed and attached outside the balloon instead, to avoid fouling the line. Arrangements were perfected for keeping the electric light clusters in a central position in the balloon at all times when in use at

Mr. Myers states that now he has a process for making very light-weight balloons which are entirely impervious to gas and which can be made in a few days. The itinerant captive balloon with its advertising facilities may be considered as having made an excellent beginning in this country, and will undoubtedly be largely in evidence in places of public resort.

Tests of Accumulators.

The Automobile Club of France, which has been active in promoting the annual exhibitions and tests of automobiles held in Paris, has also undertaken a series of tests to determine the merits of the various makes



CAPTIVE BALLOON WITH KEROSENE ENGINE.

of accumulators, in order to find out which are the best for use when subjected to the working conditions of the automobile. To carry out this idea, an installation was made in the basement of the club building, the object being to subject the batteries as nearly as possible to the mechanical and electrical strains encountered en route. The automobile was imitated by a large wagon-truck upon which was constructed a platform for the batteries. The wheels were rubber-tired, and were arranged to rest upon four corresponding wheels at the floor-level, the truck being anchored at each end by tie-rods. The lower set of wheels carried a series of projections upon their peripheries and were caused to rotate by an electric motor by means of chain gearing. It will be seen that when the lower wheels are rotated the truck is subjected to a jolting movement which gives the batteries a shaking about the same as they would receive in the vehicle upon the road. The batteries consisted generally of five or six cells, each in a wood box, which was kept locked by

batteries were charged and then discharged in series at the constant rate of 24 amperes for five hours, without being subjected to the shaking movement. The voltmeter readings for each were taken, and if the voltage fell below 8.5, the battery was removed from the circuit. After four such withdrawals, the battery was definitely excluded.

During the five other days, the batteries, previously charged, were subjected to the shaking movement, and at the same time were discharged at a variable rate, which was regulated by a revolving commutator turning once every half hour and varying the load from 20 to 100 amperes; this latter current was applied for one-half minute only. Ten revolutions were made by the commutator, and this constituted the test for each day, thus imitating the demands which would be made upon the battery by the motor when in actual service. In the intervals of repose between charging and discharging, the competitors were allowed to examine their batteries, to clean the plates, and keep up the specific gravity of the solution, but were not permitted to make repairs. The above arrangements and rules were made by a committee appointed by the club, of which M. Forestier was president and M. Hospitalier vice-president. The tests were begun on the 3d of June and closed on the 2d of December. The official report, as made out by M. Hospitalier, gives a number of interesting figures as to the performance of the accumulators. Eighteen different European makes were represented at the beginning of the test, but of these only eight were able to finish. Of these, the French makes were the Pollak, Tudor, Blot-Fulmen, Fulmen, Phénix, and Sociétés des Métaux; the foreign makes were the Societa Italiana, of Cruto, using the Pescetto system, and W. Pope & Son, Slough, England, with the Sherrin battery. The details of the experiments and the summing up of results will be made the object of a complete report to be published under the authority of the club at a later period.

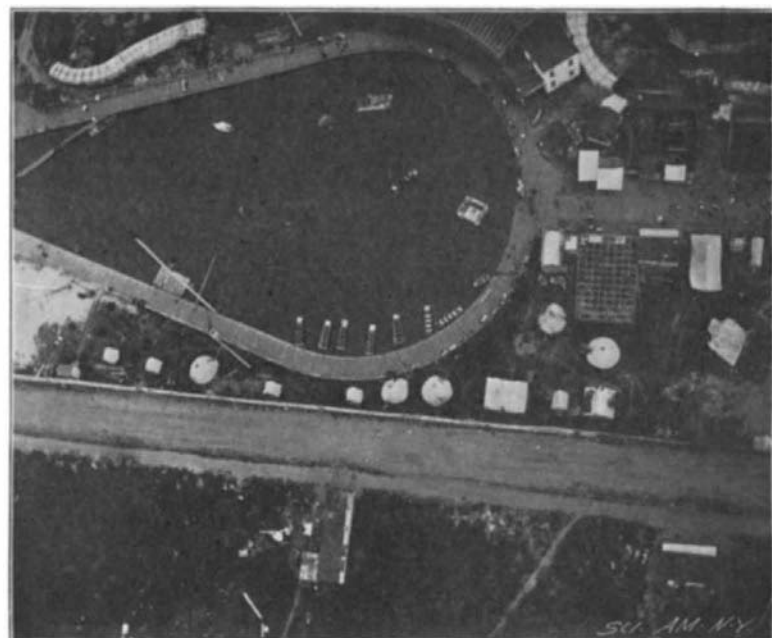
Working Platinotype Paper.

It is sometimes difficult, if one has not had considerable practice in the exposure of platinotype paper, to obtain a satisfactory result upon the first trial. It often happens that the prints which have been judged sufficiently exposed give only gray tones upon development. The reinforcing bath given in the following formula enables one to strengthen the tone of the platinotypes if too weak.

A.	
Saturated solution gallic acid.....	50 c. c.
Saturated solution nitrate silver.....	2 c. c.
Acetic acid, crystallizable.....	10 drops.
Water.....	50 c. c.
B.	
Potassium chloroplatinate.....	1 gramme.
Phosphoric acid.....	15 c. c.
Water.....	.600 c. c.



WEST BRIGHTON, CONEY ISLAND, FROM CAPTIVE BALLOON.



PAUL BOYTON'S "WATER PARK," AT CONEY ISLAND, FROM BALLOON.

night, while permitting of easy removal by day. The night ascensions proved to be very attractive.

In the daytime there was no lack of cameras, and two of our engravings show some of the results obtained. One is a perpendicular perspective of the "Water Park," with lake and grounds, a very puzzling picture when viewed from above. The other shows the West Brighton end of Coney Island. It was hoped that experiments with wireless telegraphy would be carried on between this and another balloon, but the apparatus could not be obtained in time, but two balloons were built at the "Balloon Farm" at Frankfort, N. Y., for Mr. Tesla to experiment with at Colorado Springs.

the owner. From the boxes the wires were received by a set of switches overhead, connected with the instrument board provided with the necessary voltmeters, ammeters, and energy-registering instruments. By this means the batteries were charged and discharged according to a certain régime and their performance noted. The points to be observed were: 1. The duration of the elements. 2. Their efficiency, or the relation of the energy given in charging to that furnished on discharge. 3. Conditions of keeping in order, necessity of repairs, etc. 4. Weight of the accumulators as compared with their capacity. The tests were made in periods of six days. The first day the

The prints are plunged into pure water, then into Solution A, until the desired reinforcement is obtained. During this time they should be constantly agitated. They are then washed in three different waters to which a small proportion of acetic acid has been added, and are toned in Solution B until a good black tone is obtained. The prints are then well washed as usual.

THE amount of copper produced in the United States last year—estimating the output of December—was 264,600 tons. This amount includes the copper in sulphate, and shows an increase over the production of 1898 by about 10.5 per cent.