

ELECTRIC SEARCHLIGHT FOR FIELD SERVICE.

The Second Signal Corps of the New York National Guard have hit on a very simple, and at the same time a most efficient method of operating an electric searchlight in the field. As shown in the engraving, a locomobile is employed both for transportation and for producing the power to run an electric generator, which is situated in the trailer attached to the rear axle. When it is desired to use the searchlight, the rear wheels of the locomobile are jacked up by tilting a supporting block against the rear axle and pushing the vehicle back onto it, thus raising the rear wheels about two inches off the ground. The tongue of the trailer is now secured to the right end of the block, and a brace rod attaches the body of the trailer to the left end, thus insuring a rigid connection and a perfect alignment of the generator pulley and the driving wheel. The trailer contains a 1-kilowatt generator of the Sprague make. This is provided with a 3½-inch pulley, which is driven by a belt from the right rear wheel of the locomobile. Of course, it is necessary to couple together the differential gear on the rear axle, otherwise the driving wheel would remain stationary while the other would spin around.

The coupling is easily made, for the locomobile is of an early type, in which the differential gear is not incased. Bolt holes are provided in the large bevel gears, through which bolts are inserted to clamp together the rear axle sections into an integral driving shaft, one wheel serving as a balance wheel for the other which drives the generator pulley. Power is thus generated to run a 50-volt, 10-ampere lamp. A marine projector of the Bogue make is used, having a 7-inch Mangin mirror and projecting a beam of 8,000 candle power. The current generated can also be used in working the Ardois system of signals. It takes an incredibly short time to rig up the machine for action. Four men are employed to handle the apparatus, two of them being seated on the trailer while the machine is on the road. The trailer, aside from containing the dynamo and searchlight, has a large chest at the rear in which emergency tools of all descriptions are carried.

The trailer is a "home-made" device, being designed by the captain of the Corps and constructed by the men in their armory, from the materials they could get together. This is shown from the fact that it is mounted on the rear truck of a locomobile, which contains a differential gear, serving no purpose, of course, in this place. This, however, does not detract from the ingenuity of the Corps, but rather accentuates their resourcefulness in using the things at their ready command.

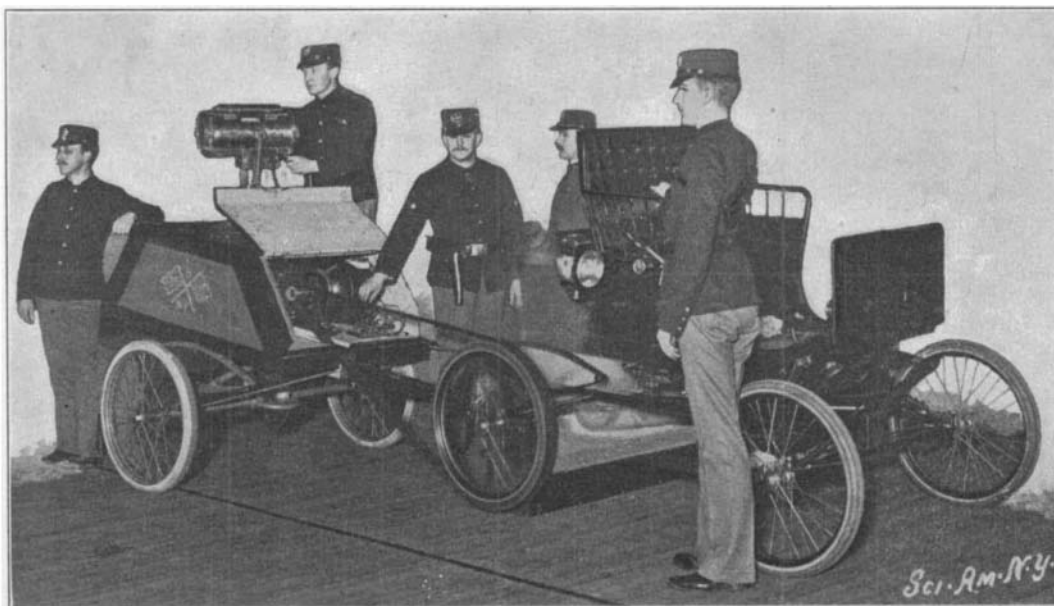
The possibilities of the apparatus were well brought out at the Military Tournament recently held in Madison Square Garden, New York. A tower was hastily constructed of timber lashed together with rope, and the

projector was mounted on the top. Wire connection was made with the generator, and the searchlight was very advantageously used from this elevated position.

The newest form of sound records for phonographs is a sphere. It is claimed that a spherical record besides being compact, is capable of recording a speech or song of considerable length.

RAILROAD TRAIN TAKING ITS OWN PHOTOGRAPH.

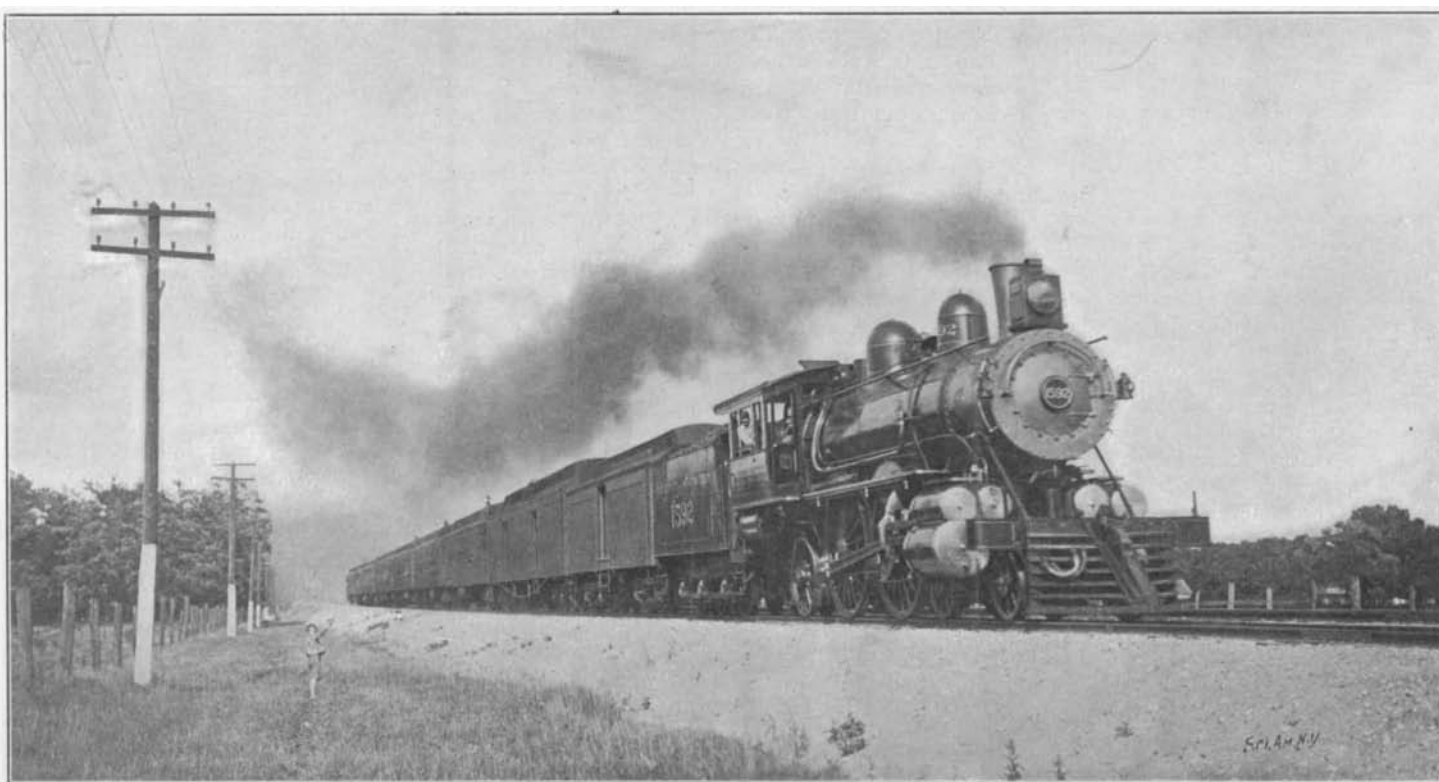
A passenger train on the Chicago, Burlington & Quincy Railroad recently performed the rather remarkable feat of taking its own photograph, as reproduced in the accompanying illustration. The electric current was employed to secure the picture in an ingenious manner. The camera was equipped with a very rapid shutter, estimated to move at a speed of 1-1,000 of a second in covering and exposing the lens.



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One of the rails over which the train was to pass was connected with the camera by an electric switch which operated the cylinder, furnishing the compressed air to move the shutter. The photographer who essayed to get the picture calculated that when the train was running at full speed it would pass over about eighty-eight feet in one second, and made arrangements accordingly. The electric switch was placed in position about six feet back of the place where it was desired to catch the photograph, in order to allow for the movement of the electric current and release of the shutter, rapid as it was. With the electrical device completed, the camera was set up and focused at the portion of the track to be covered, and the shutter set for instantaneous exposure and connected with the switch. When the front wheels of the locomotive drawing the train touched the electrically connected rail, the shutter was released and an excellent picture taken, not even a blur showing on the negative after development. This automatic photograph was planned by Mr. Ayrault Green, of Chicago, and taken in the suburbs of the city.

An experiment is now being made by the Chicago &



INSTANTANEOUS PHOTOGRAPH OF AN EXPRESS TRAIN, TAKEN BY ITSELF WHEN RUNNING AT FULL SPEED.

Northwestern Railroad on the new Overland express which will be watched with much interest both by railroad men and the public at large. The express in question is equipped with telephones, which connect not only the several cars, but can be connected with local and long distance wires at any station along the line. If this experiment proves successful the company will probably install a service, which will enable passengers to telephone from a moving train.

Popular Errors in Meteorology.

Prof. Gannett, of the United States Geological Survey, has a paper in the Bulletin of the American Geographical Society which treats of popular errors in meteorology and geography, entitled "Certain Persistent Errors in Geography." A few of his points are summarized in what follows:

Forests and Rainfall: An example of the persistence of error is the idea that the presence or absence of forests has an influence on the amount of rainfall. Some keen observer long ago detected the fact that forested regions enjoyed a heavier rainfall than those not forested, and jumped to the conclusion that rainfall was produced by forests, and that the removal of forests diminished the rainfall. Looking over the earth he found many treeless desert regions and forthwith instanced them as frightful examples of men's wastefulness. Syria, northern Africa, parts of Italy, are often quoted as illustrations of man's destruction of climate. In reply, man can certainly plead guilty. The geography of this Mediterranean region, the configuration of land and water, and the direction of the prevailing winds, are such as to give it a light rainfall—forests or no forests. The situation is really this: Want of rain prevents the growth of trees; want

of trees does not prevent rain. **Forests and Floods:** Another persistent error is the belief that floods in our rivers are more frequent than formerly because of the cutting down of forests in their drainage basins. It is probable that the clearing of land by cutting away forests and undergrowth does change the regimen of streams, increasing their flood height and diminishing the flow at low stages. In other words, water probably runs off or evaporates more rapidly from bare ground than from ground covered with forests. But where the forests are cut away the ground is seldom left bare; it is cultivated or quickly becomes covered with bushes which hold the water quite as effectively as forests. The main fact is, however, that the floods in our rivers are no greater or more frequent now than in the past.

Climates and Ocean Currents: The well-known mild climate of the northwest coast of America is commonly attributed to the Japan Current. The Gulf Stream is supposed to have the same influence on the western coasts of Europe, etc. But can it be supposed that the Japan Current, however warm it may be when it leaves the tropics, retains any appreciable excess of heat after a journey of 6,000 miles in northern latitudes? As a matter of fact, no trace of this current reaches the shores of North America. In the North Atlantic the condition is much the same. The Gulf Stream disappears as a current long before the British Isles are reached.

The recent violent earthquake at Shemakha near Baku (Russia) afforded some very interesting and conclusive data regarding the rate of the earth's vibration. Shemakha is some 1,400 miles distant from Moscow as the bird flies, but the seismographic instruments in the university of the latter city duly recorded the disturbance. The earthquake occurred at 12:15 Shemakha local time, and it was recorded in Moscow at 12:13 local time. The difference in time between the two cities is 35 minutes, so the vibration of the earth's crust traveled over the 1,400 miles separating the two points at a velocity of 40 miles a minute.