

**Monazite Production in North Carolina.**

This industry is limited in extent by the lower prices and greater quantities of monazite found in Brazil. After several years of absolute quiet, with neither mining nor shipping, in Cleveland County, North Carolina, in 1897 a spasmodic effort was made to revive the business, says The Engineering and Mining Journal. Several carloads of monazite which had been mined during the period of activity several years ago remained on hand, scattered among a large number of holders. These were bought up early in 1897 and several carload shipments were made. Owing to the length of time this sand had remained on hand, and a total lack of any buyers at any price, it was possible to purchase these mixed lots at a low price. Even with this advantage it was found impossible to meet Brazilian competition; much less can this be done where it is necessary to mine the mineral. Nearly all the mines or streams have been worked over once, and any new work must be at a disadvantage, labor being less skilled, while all the old tools have been lost or worn out. The operations in any case being so small, a price direct from the mines cannot be made which will meet competition. The present inquiry for monazite sand is brisk enough, but the conditions imposed are practically prohibitory.

The first is a guarantee of thoria contents. The nature of monazite mining is such that only comparatively small quantities can be obtained from one locality—at the outside ten tons, and this only after considerable time. Buyers want at least car lots and regular, quick shipments, besides demanding guarantee of thoria. Here is the stumbling block. No producer will guarantee thoria without an analysis, and the sand, having been produced from a dozen properties, may vary from 1.5 per cent thoria to even 6.5 per cent. Each mine will vary as to thoria contents. Hence, to be at all certain of the quantity of thoria, only well known mines which produce a sand high in tenor can be worked at all. About 5 per cent thoria is an acceptable percentage and will always command attention; but it would be far safer to guarantee 4 per cent or less. These lower grades are not wanted at any price. Only an analysis can correctly determine the thoria contents. Some bright yellow 90 per cent monazite sands may be far lower in thoria than seemingly inferior sands.

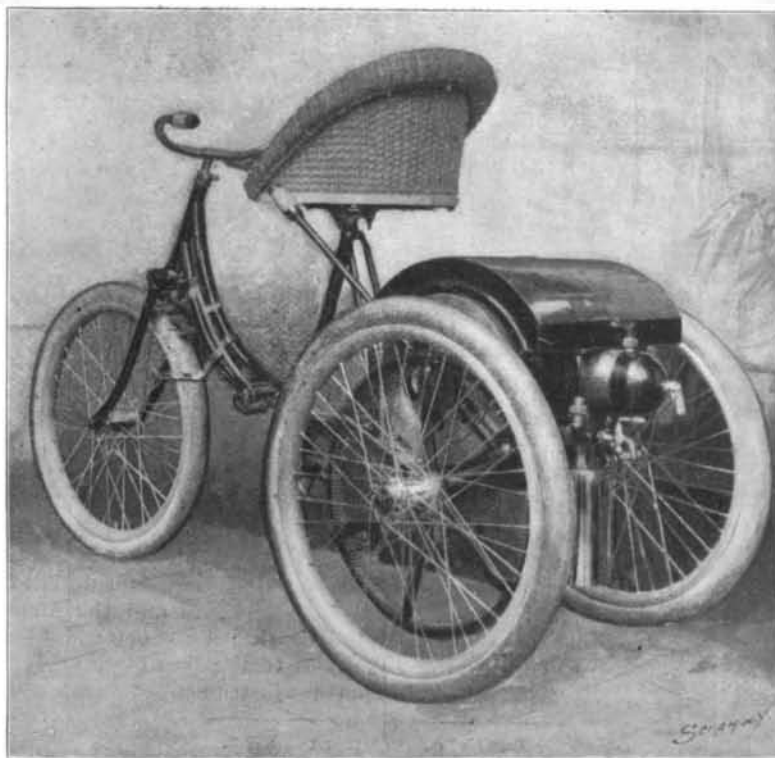
Few of the actual miners have any capital, and they would not be willing to carry on hand more than 500 pounds of monazite sand. Hence the business should be handled by an intelligent man with money to take up and pay cash for sands to the amount of a shipment, say \$1,500. He would be called upon to give a guarantee.

Unfortunately, there is not profit enough in the business to induce anyone with capital to take it up. The monazite industry at one time employed several hundred people and brought much money into the district in Western North Carolina where the sand was found; and its loss is much regretted.

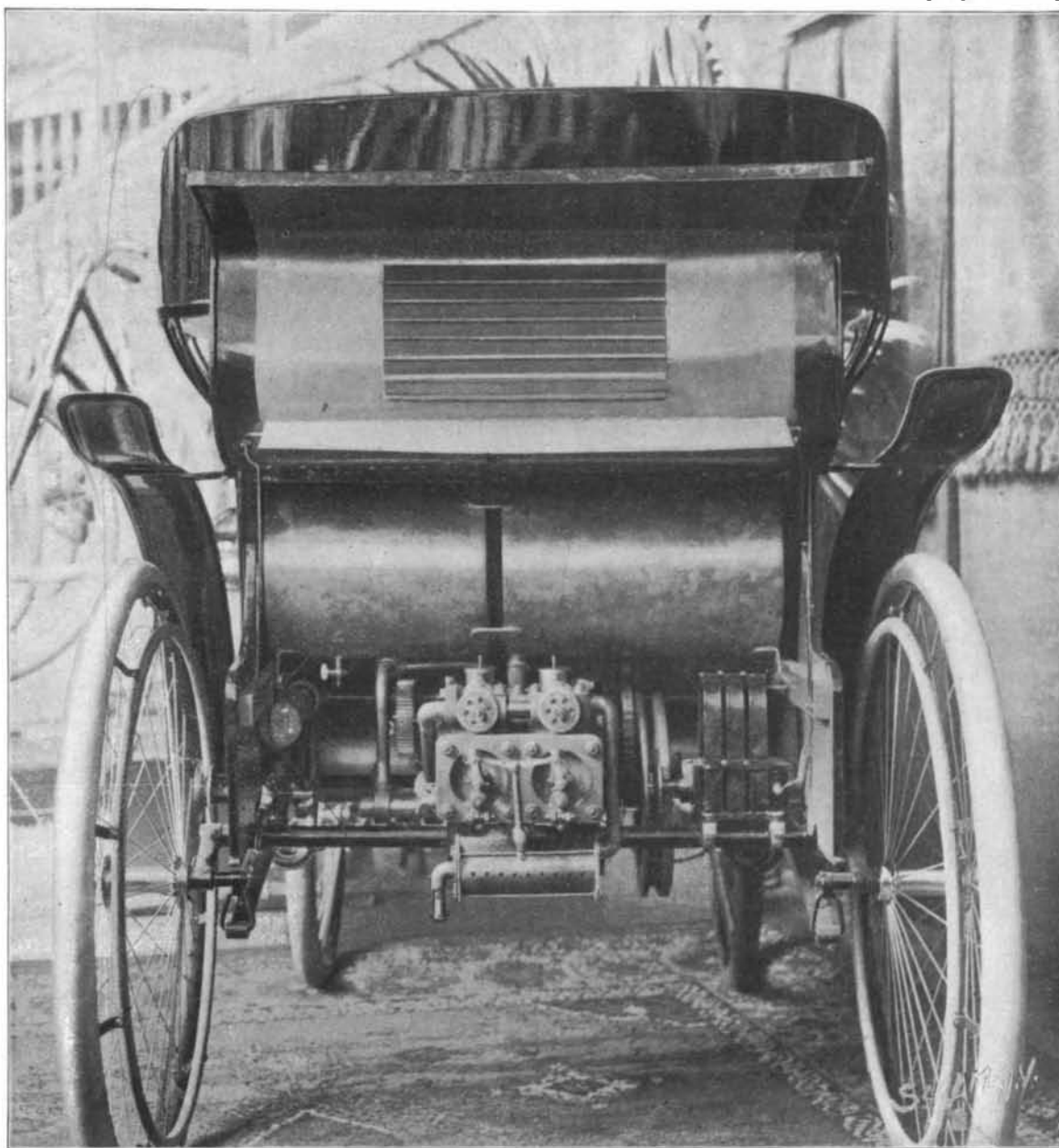
LIEUT. T. C. DICKSON, United States army, of the Springfield Arsenal, has invented a sight which has been accepted by the Ordnance Department. This sight has a wind gage and is so constructed that the drift is automatically made for all ranges up to 1,200 yards, no matter in what direction the wind is blowing. As fast as the sights can be manufactured they will be supplied to the troops to replace those now in use. The official designation of these sights will be "Model of 1898."



THE HERTEL GASOLINE MOTOR PHAETON.



THE TINKHAM GASOLINE MOTOR TRICYCLE.



THE HERTEL MOTOR PHAETON DRIVING MECHANISM.

**AUTOMOBILES AT THE LATE CYCLE EXHIBITION.**

Great interest was shown by the public in the progress made during the past year in the construction of automobiles at this exhibition, and these exhibits attracted crowds of visitors.

The motive power of the horseless vehicles was about equally divided between electricity and gasoline, each having distinct advantages of its own.

Our accompanying illustrations show types of most of the vehicles on exhibition.

Every one was attracted by the neat looking one-seated gasoline four-wheeled phaeton adapted to carry two persons, called the "Hertel," manufactured at Greenfield, Mass. Its general appearance will be noted in the small illustration. The forward wheels are of bicycle construction, having springforks, to allow for unevenness of the road, and are connected together by a rod to the horizontal steering lever just in front of the operator.

The interior mechanism will be seen in the large illustration, showing its accessibility for examination by the entire hinged metal back of the carriage being raised. There are two cylinder heads located horizontally in the center, having attached suitable sparking devices, cams, and levers in plain sight. Directly under the cylinders is the muffler for the exhaust, having a small elbow turned downward at one end. It deadens the sound of the exhaust most effectively. To the right of the cylinder is the small dynamo for sparking, the armature of which is rotated by frictional contact with the main shaft fly-wheel; located on the extreme left is the spark coil, and under the seat is a storage battery. The current for sparking is taken from the storage battery, the latter being kept charged by the dynamo when the carriage is in motion. Above the engine cylinders and under the seat are two tanks separated by a small space; the left is for the storage of gasoline, the right for water. It will be seen that the rear axle is of peculiar construction, in the shape of the letter U, and that the single springs supporting the body at the rear are suspended from stirrups depending from the wheel axles. Also the driving wheels have an interior annular driving rim against which the grooved driving pulleys of the main driving shaft impinge and impart the power of the engine

to the wheels by friction. This shaft is manipulated forward or backward by the single lever rising upward in the center of the carriage and is one of the features which make the vehicle distinctive. By means of a latch lever attached to the driving lever the operator starts the engine from his seat by engaging the latch lever in a ratchet wheel under the seat attached to the driving lever, so arranged that when the driving lever is drawn suddenly back it will cause the ratchet wheel to rotate the engine enough to allow the sparking, and thus cause the needed explosions. After it is started the latch lever is released and the driving lever pushed forward, which brings the driving grooved pulleys into contact with the driving wheel rims. The speed may be regulated by this frictional contact or by rotating the top of the handle of the driving lever with the hand, which admits or cuts off the air supply to the engine. A backward motion of the driving lever applies the brake. With this one lever several things are accomplished easily and quickly. It is stated that on a fairly level road this vehicle will travel 75 miles on one gallon of gasoline and at any desired speed up to 20 miles an hour. Its weight is 500 pounds.

The Tinkham motor tricycle designed for one person was another novelty in the gasoline type. It is provided with a small, double cycle motor, having the usual mixing chamber. The water for cooling the cylinder is in a tank the width of the machine, located over the motor between the two rear wheels, forming a cover for it. The balance wheel may be seen under the left end of the water reservoir. A hand lever on the left throws in or out a clutch which connects the driving shaft to a pedal crank conveniently operated by the feet like a bicycle. To start the machine, the driving shaft, when clutched to the pedal crank clutch, is rotated by the movement of the feet, the clutch is then disconnected by the hand lever and the feet raised and supported on two rests. The speed is regulated by pressure on a small lever attached to the steering handle bar, which cuts off the supply of air to the mixture. The electric sparking is produced by a small storage battery, which is kept charged by a small dynamo geared to the shaft. A muffler is provided at the rear to soften the sound of the exhaust. Power from the engine is imparted to the wheel by a pinion on the engine shaft engaging in an annular geared rack secured on the inside of the rear wheel. A reservoir for gasoline is located in front of the rear axle. The cup-shaped cylinder projecting at the rear is one of the driving cylinders, the other projecting forward in the same way on the other side. It is said to have a speed of 15 miles an hour and is easily managed.

There were three separate exhibits of electric motor vehicles; in the Riker Electric Motor Company's booth we noticed a neat pattern of a phaeton popular in France, a three-wheeled runabout, and a covered delivery wagon. We shall hope to have illustrations of these at another time. The "Orient" electric runabout, it will be observed, is provided in the rear with a capacious battery space, having the controller lever on the left. The body is supported on a double trussed frame built of light steel welded tubing. The front axle support is swiveled to allow for unevenness of roads, there being attached also steering rods which operate the two front wheels in combination with a center lever located in front of the driving seat. The raising of the lever, we will say, turns the wheels to the left, the lowering of it steers to the right. A foot lever connected underneath rearward, by diverging wire ropes to brake bands located near the hubs of the rear wheels, operates the brake. A three-kilowatt motor attached to the frame underneath gears into a special spur differential gear, thereby equally distributing the power on the wheels whether going straight or around a curve. The chloride accumulator battery is used and has an efficiency of 1,800 ampere hours or a discharge which will propel the vehicle for 25 miles on a level road. The size of the pneumatic tires on this vehicle is something remarkable.

An electric "Dos-a-Dos" exhibited by the Pope Manufacturing Company is one of the new forms of these vehicles. The controller lever is on the left hand side and the steering lever in the center. The seats are back to back, which provides ample room underneath for the chloride accumulator battery. A head light is located under the dash board, and two side lamps as well. Two motors are provided on the rear axle to be run at different speeds according to the position of the controller lever; an efficient foot brake is also provided. The vehicle is very substantially built, and with one charging of the battery will make twenty-five miles on a smooth, hard, fairly level road. A loaded golf case is hung from the side lamp, as if the vehicle was equipped to carry a golfing party.

It would seem, with the rapid and universal introduction of sources of supply of electricity and its production at a very small expense, there should be a remarkable increase in the near future of these motor vehicles.

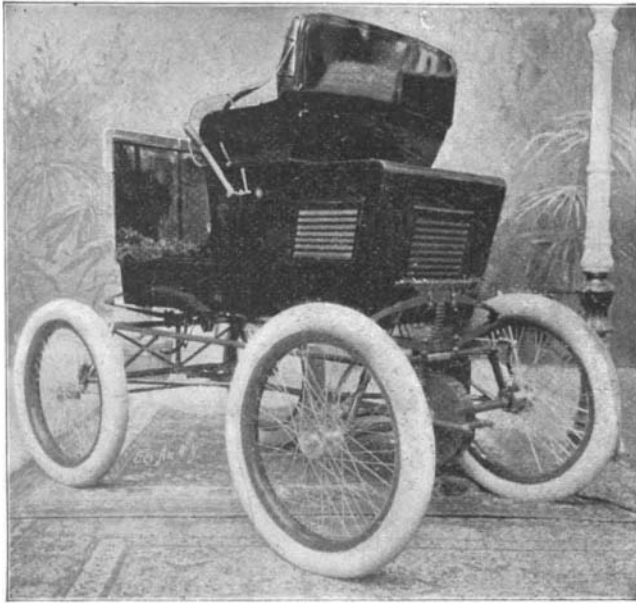
#### A Flashlight Explosion.

Again we have to caution our readers about the dangers of making and using flashlight powder. A chemist and photographer employed by the Telegraph Publishing Company, New York city, was compounding a flashlight mixture in the studio in West Forty-Second Street, on February 9, when the mixture exploded. The photographer was the only man in the studio at the time, and he was too badly injured to tell what actually occurred. The report of the explosion could, however, be heard a block. The tenants were badly scared, and so were the occupants of adjoining buildings. The explosion was followed by the sound of breaking glass, the concussion having been so great that it wrecked the glass skylight of the studio. The first person to arrive at the studio found the photographer's clothing ablaze and that he was severely burnt about the head, arms and body. He was taken

to the New York Hospital, where his condition was said to be serious. The blaze in the building was extinguished without difficulty.

#### The Observatory at Manila.

It is feared that the heavy firing in the course of the recent engagement at Manila will have a serious effect on the usefulness of the observatory, which is famous the world over for its investigation on earthquakes and earth disturbances, and a great deal of knowledge concerning typhoons depends upon the Manila Observatory. When Dewey entered Manila Bay with his squadron on the first of May, the first

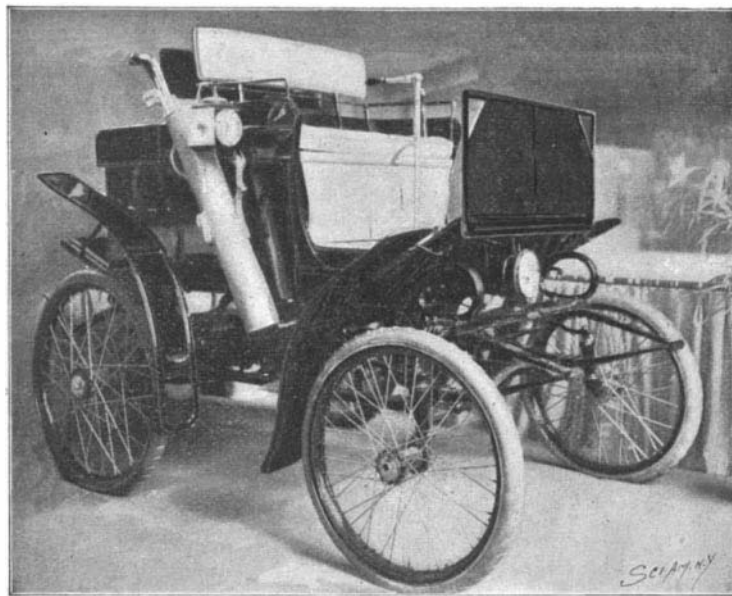


THE ORIENT ELECTRIC RUNABOUT.

shot warned Padre Doyle, who was in charge of the delicate instruments, of the necessity of sheltering them. The instruments were all buried, and observation ceased until General Otis notified him that the army and navy would afford him every protection in their power. The instruments were then exhumed, adjusted, and the recording of earthquakes and the forecasting of typhoons were continued as before. There was considerable anxiety as to the possible injury to the valuable and important instruments.

#### Death of William Laird.

William Laird, of the famous British shipbuilding firm of Laird Brothers, at Birkenhead, died on February 7. He will be principally remembered in connection with the construction of the Confederate war vessel "Alabama." At the time of the breaking out of our civil war the Messrs. Laird were the foremost shipbuilders of the world, and the "Alabama," which was completed in August, 1862, was the two hundred and ninetieth vessel which they had built. She was known as the "Two Hundred and Ninetieth" before she was christened by the Confederates. Naturally the firm was bitterly de-



THE POPE ELECTRIC "DOS-A-DOS."

nounced by the people of the North for building her, and, of course, in due time the British nation paid the inevitable penalty for allowing the construction of this boat.

THE Westinghouse Electrical and Manufacturing Company has just received word that the newly organized French Westinghouse Company has obtained the contract for the equipment of the Paris Metropolitan Railway with the underground trolley. Several German and American concerns were competitors for the contract. The apparatus will be made at the company's works at Havre.

#### Russian Exploration in Asia.

Deserts are becoming comparatively scarce on modern maps. Little by little as they come to be explored it is found that the word desert should not be applied to the territory. The great Gobi desert in Asia is still put down in almost every atlas as an arid waste, but Russians exploring it have found it is not a desert, as has been supposed. Obrutscheff says that the physical features of the so-called Gobi desert show that it is not a sandy waste at all, but a plateau with all the characteristics of the Steppe. It was evidently once claimed by the sea, and its many hills and valleys are the results of a long erosion since its elevation above the sea. A precipitation occurs in all parts of the Gobi territory, and although it is not very plentiful, still the quantity of rain and snow produce a good growth of grass. The caravan route from China to Urga is traversed every year by about 100,000 camels with loads of tea, and the wells in the more barren part of the Gobi territory are usually not more than twenty or thirty miles apart. Wandering bands of Mongolians have large herds, and only in years of great drought have they any difficulty in finding sufficient quantities of fodder. It was from the Gobi desert that great hordes of mounted barbarians issued who gave great trouble to China. It was these barbarians which caused the Chinese to erect the great wall, more than 1,200 miles in length, around the northern frontier of the empire. The wall, however, did not always prove effective in preventing their inroads.

#### British Columbia Museums.

Mr. Harlan I. Smith, of the Department of Archæology of the American Museum of Natural History, in a recent paper in Science, describes the Natural History Museums of British Columbia. Mr. Smith traveled all through British Columbia, spending about six months there, and he noted with interest the growth of scientific institutions, which he says exist to an unusual number in proportion to the population and number of educational institutions. The museums are exceptionally well administered, considering their isolation from other institutions. The most important among them is the Provincial Museum at Victoria. It is located in the east wing of the Parliament building. The Curator is now devoting special attention to preparing groups of birds and animals represented in their natural environment. He has been sent to great museums of the East and even to England to investigate the methods of preparing such groups. It is the general principle of museums to represent the fauna of the province, and visitors from foreign countries see at a glance the natural treasures of the region. This rich mining region is naturally productive of fine mineral specimens, which are well represented in the museum. The labeling of the collection put to shame many of the museums in the East, says Mr. Smith. New Westminster, with a population of only 8,000, made a splendid beginning toward establishing a museum in the upper portion of the city library, but, unfortunately, a fire on the 11th of last September destroyed the library and the collection.

#### Guam a Maritime Legal Fiction.

Guam, in the Ladrone Islands, which has now passed into the possession of the United States, has had a most curious use, for every year thousands of vessels clear at custom houses for Guam, yet none of them ever go there. Guam seems to be a maritime Tom Tiddler's ground. When a vessel clears for a certain port, it must go to that place by the shortest route of sailing, unless turned away from it by stress of weather, and any failure to do this calls at least for an explanation. It is not always desirable to declare the destination of vessels, specially among tramp traders who may wish to avoid carrying mail, or who may wish to pull the wool over the eyes of business rivals. In cases of this kind, the vessel clears for Guam and then usually sails away in exactly an opposite direction, and the law appears to be satisfied. This extraordinary state of affairs is based on old traditions of Spanish exclusiveness in trade in the East and West Indies. Owing to force of circumstances over which they had no control, the Spaniards found it desirable to open the Indies to trade, and in the early part of the century the old restrictions were removed; but by some chance the Ladrone Islands were not included, and, in accordance with the laws of the Indies, every vessel calling there without leave from the Spanish authorities to do so was forfeited. Of course, the penalty of the law has not been exacted for many years, but its existence has given rise to the legal fiction of clearing for Guam. It is probable that Guam will now prove less popular.