

### AN AUTOMOBILE FOR RURAL FREE DELIVERY.

BY WALDON FAWCETT.

For several years past rural mail carriers in New England and certain other sections of the country which are favored with exceptionally good roads have employed automobiles in making postal deliveries and collections in country districts. A number of factors, however, operated against a general sanction by the Post Office Department for the use of the horseless vehicles by rural postmen as a class. These influences included the varying conditions of the roads in many parts of the United States; physical aspects of the country; unbridged streams; defective mechanism in the construction of some of the automobiles offered for such service, and ignorance on the part of many rural carriers in regard to the operation of the motor cars. Of late, however, conditions have appeared to be ripe for a much more general utilization of automobiles in this branch of the postal service, and action has been taken accordingly.

Upon the recommendation of Fourth Assistant Postmaster-General De Graw, who has general jurisdiction over rural free delivery, Postmaster-General Cortelyou has issued an order sanctioning the use of automobiles and motor cycles where the roads are maintained in good condition and the physical aspects of the country are favorable to the use of such cars.

As a precautionary measure, the Department reserves the right to require rural carriers to discontinue the use of horseless vehicles, and resume the service of their routes in ordinary vehicles, if complaint is made of unsatisfactory service arising from the use of autos.

The chief circumstance which induced the government to adopt this new policy of encouragement in the use of automobiles in rural free delivery was found in the recent manufacture of a motor car designed expressly for the rural postal service, and which it is claimed not only remedies the defects found in the earlier motor cars tested in connection with rural mail carrying, but can also be furnished to country postmen at a price in the neighborhood of \$400 each, or little more than the average country postman might be called upon to expend for a team of horses and a vehicle, with which to traverse his route under the old conditions.

The new automobile during the past few weeks has been subjected to the best of all tests—practical service on various rural mail routes in the States of Virginia

and Maryland. These demonstrations will be repeated some six months hence, in order that the government officials may have an opportunity to observe the behavior of the vehicle on roads choked with snow and in the face of winter conditions in general.

This unique postal motor car is an Orient friction-drive buckboard, with a seating capacity of two persons. It is fitted with a mackintosh buggy top, and on the forward part of the body is mounted a case divided into pigeon-hole compartments for holding the mail. The weight of the car is 600 pounds, and with a carrier and the maximum quantity of mail matter to be transported on any trip, the gross weight would probably be considerably less than 900 pounds. The maximum speed of the car is 25 miles, and the normal speed on ordinary roads is 15 to 18 miles per hour. The manufacturers claim that the hill-climbing power of this type of car exceeds that of any other motor car, regardless of horse-power or weight, and in actual tests machines of this design have ascended grades of 32 per cent.

The propulsive power is furnished by a single-cylinder, air-cooled motor of four horse-power. A three-blade fiber fan mounted on the front of the cylinder assists in the air-cooling properties. The motor consumes about one gallon of gasoline per thirty-five miles, and the capacity of the gasoline tank is three

and one-half gallons. The average length of a rural free delivery route is twenty-four miles, and the introduction of an automobile on any route, with its consequent saving of time, makes necessary an entire rearrangement of the carrier's schedule.

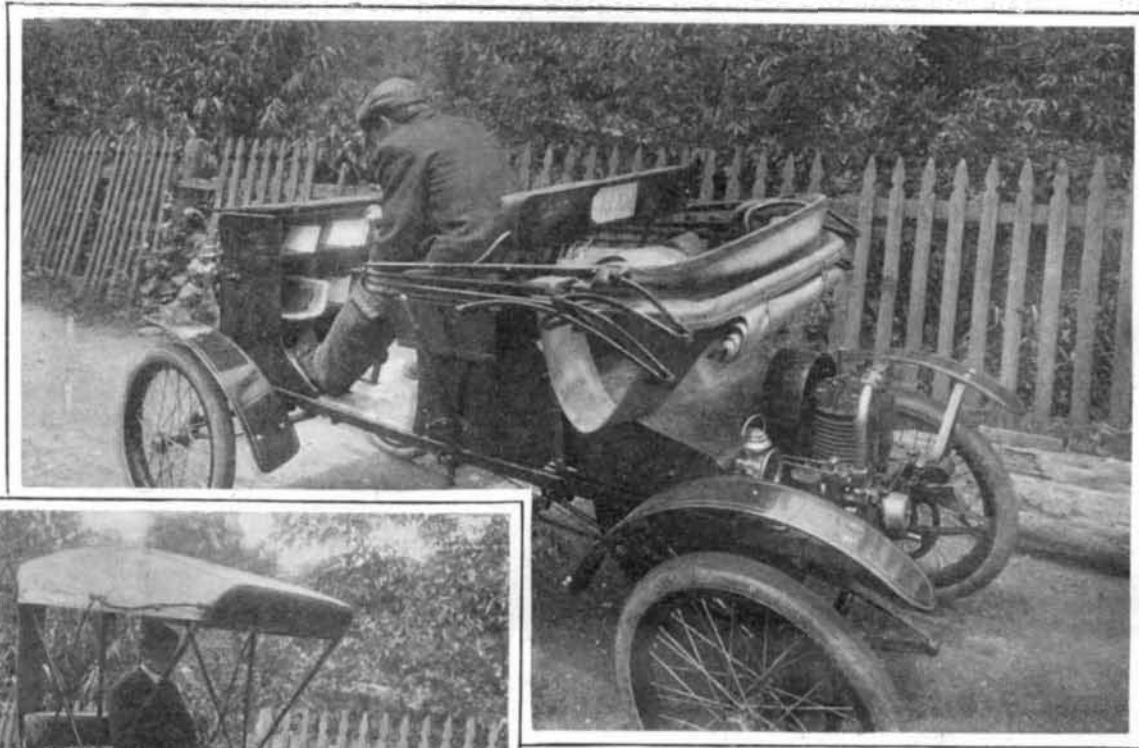
#### Seasickness and Equilibration of the Eyes.

Many people have no doubt noticed, when traveling by sea, that the motion of the ship could be seen very distinctly, even when there were no hanging lamps, draperies, or fixed points, such as the horizon or clouds, within range of sight.

Some may think that seeing the motion in this way is due to the imagination receiving its suggestions from the motion of the internal organs, and especially the stomach, for I am here supposing the body to be held perfectly rigid.

From observations which I have recently made it seems evident to me that the cause for seeing the motion is entirely different.

In the first place, you can always see the motion a fraction of a second before you begin to feel it. In the second place, you cannot see a perfectly horizontal motion or a gentle vertical (heaving) motion. In the third place, watching a fixed point close to you, such as a pattern on a carpet, when the ship is pitching and



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New Automobile for Rural Free Delivery, Now Undergoing Government Tests.

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way as are ships' compasses in their binnacles. The eyes are, furthermore, perfectly balanced, so as to make their muscular displacements as little tiring as possible. In their normal position, the pull of gravity is exerted vertically through their centers, and the muscular mechanism is compensated for gravity.

Any angular change of position will displace the eyes just as it displaces the stomach, excepting that the eyes, being a great deal more sensitively suspended, will register the displacements more quickly. It is not, however, the motion of the eyes which strains the eyesight, but the act of resisting this motion.

If, with your eyes shut, you attempt to fix the mental representation of a point, which a moment previously you were watching with eyes wide open, you will find that, after one or two motions of the ship, the bodily feeling will precede any visual sensation which your imagination can conjure up. The imaginary point is no longer fixed, but follows the eyes as they let themselves go to the motions of the ship. No strain of the eyesight is caused by a muscular resistance, and the displacements, while felt, can no longer be seen.—Alfred Sang in Nature.

The deepest colliery shaft in Germany at the present time is the No. 3 shaft of the Morgenstern Colliery at Zwickau, which is 1,082 meters deep.

### A MECHANICAL ELECTRO-PLATING APPARATUS.

BY A. FREDERICK COLLINS.

It is well known that before articles can be electroplated they must be cleaned, both mechanically and chemically. Prior to the invention of the arrangement here described and illustrated, it has been the practice to place the articles in a jar or sink, or to string them on wires, when they are carried through a concentrated solution of lye, then cyanide and water, or a mixture of suitable acids, as the case may be, and then transferred to an ordinary plating tank.

The cost of plating small articles by this method was not only excessive, but the work done was far from good. These features led to the employment of plating barrels. The merits of plating barrels were not to be ignored, whatever their disadvantages might be; for by their use much time was saved. It was therefore unfortunate that the plating barrel had, in almost every case, to be abandoned, owing to imperfections.

In the Hanson & Van Winkle mechanical electroplating apparatus these defects have been eliminated, marked improvements made, and a machine evolved that is commercially perfect. Batches of the very smallest articles, such as screws or pins, or of pieces as large as stove legs and pulley wheels, may be plated with nickel, brass, copper, or zinc, entirely doing away

with the handling, labor, and cost of wire formerly used in stringing.

Briefly, the apparatus consists of a plating bath in which a cylindrical or other shaped barrel made of wickerwork or any suitable material, is completely submerged. In this barrel is then placed the work to be plated, making contact with the cathode terminals, which are suspended from the conducting shaft inside the barrel by means of short sections of chains. The barrel is revolved by a pulley outside of the tank, and while the deposition of

#### Distributing Mail in the New Rural Free Delivery Automobile.

rolling, is far more tiring to the eyesight than when the ship is motionless or running perfectly steadily. All this points to the appearance being due to a true relative motion of the eyes to the ship.

The eyes are suspended in their muscular settings, much in the same

the metal on the articles is taking place, the latter are tumbled about, until by the time the work is completed, they have taken on a comparatively bright polish.

In one of the earlier forms of the apparatus, the perforated barrel submerged in the electrolytic bath was rotated by a belted pulley immersed in the solution. Another trouble arose from the metal that was deposited upon the framework and other metal parts in the solution; a third fault was the inconvenience of getting the barrel in and out of the solution.

In the new form of apparatus the working parts have been greatly simplified, and the exposed surfaces reduced to a minimum. This has been done by placing the pulleys outside the tank, the shaft passing through one end of the latter, while the metal portions sustaining and rotating the barrel are covered with hard rubber.

The general arrangement of this electro-mechanical plater is shown in perspective in one of the illustrations, with the side cut away, so that the details of construction are more clearly brought out. The barrels are of various sizes, and are made cylindrical, hexagonal, or octagonal, and of wickerwork, wood, hard rubber, celluloid, etc., according to the character of the work to be plated. It is possible to handle pins, shoe nails, and other small pointed articles by using a barrel with sufficiently small perforations to retain them.

Though the drive is from the outside, which avoids the use of belts running in the solution, yet the plating barrel is removable at any time without throwing off the belt, or in any way interfering with the drive. This is accomplished through the medium of a feather and clutch just inside the tank; that is, the end of the pulley shaft is slotted, and the end of the shaft to which the basket is attached slips into it, so that when they are thus joined together both revolve, yet permitting the basket or barrel to be lifted out of the solution, and replaced easily and quickly.

The electrical contacts between the terminals of the dynamo or other source of current and the cathode terminals are large and ample, the current to the shaft