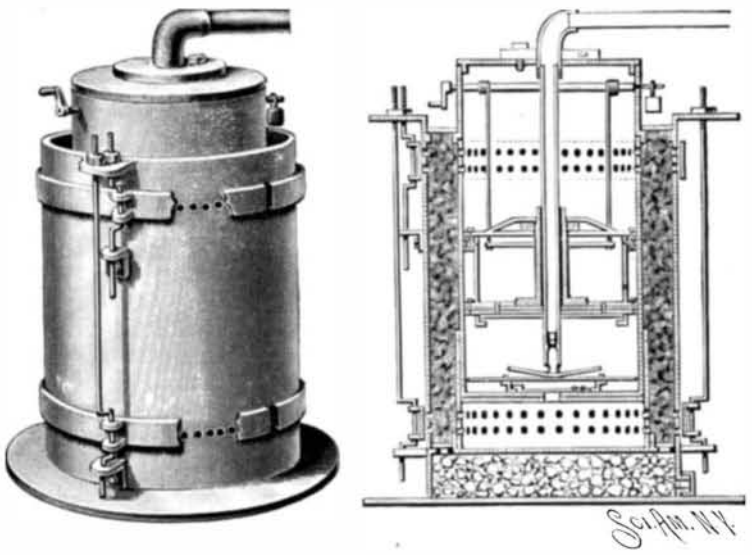
### A DEVICE FOR RAISING LIQUIDS.

The accompanying illustration shows a perspective and a sectional view of a device for raising water from wells, rivers, etc., or for raising other liquids, as may be desired. It has been patented by Mr. Carl Storla, of Belford, South Dakota. The central cylindrical casing has a bottom aperture covered by an upwardly opening valve held in an open frame, the lower end of an upwardly extending discharge pipe being secured on a bar of this frame. The pipe has side openings at its lower end, through which water passes from the casing into the pipe, there being also in the pipe a valve to prevent water and air from rushing down when the piston is raised, the pipe extending centrally through a vertically movable piston. This piston is adapted to press on the water in the lower part of the casing, and is raised by ropes winding on a windlass in the upper part of the casing. The piston is adapted to be weighted by suitable material, as stones, etc., or with water, which may be allowed to enter at higher openings, there being a valve in a false bottom of the piston to allow of the escape of the water as the piston is raised. The lower part of the main casing fits into and is supported in a second casing, the lower end of which rests on a plate formed with an outer shell, and forming a space adapted to be filled with filtering material, there being below the plate a base loaded with stone to hold the device in position where it is used in a lake or river, although this is not necessary when it is used in wells. When the piston is held in an uppermost position by the ropes wound upon the windlass, water passes through the lower openings and through the valve in the bottom of the central casing; the operator then lowers the piston, by turning the crank arm of the windlass, and, when the piston reaches the level of the water, the crank arm is released, so that the piston presses by its own weight upon the water, forcing it into and through the discharge pipe. When the piston has reached a lowermost position, the water in the central casing has been nearly all expelled through the discharge pipe, and the piston is again raised by winding up the ropes on the windlass.



STORLA'S DEVICE FOR RAISING LIQUIDS.

### AN ELECTRIC CARRIAGE.

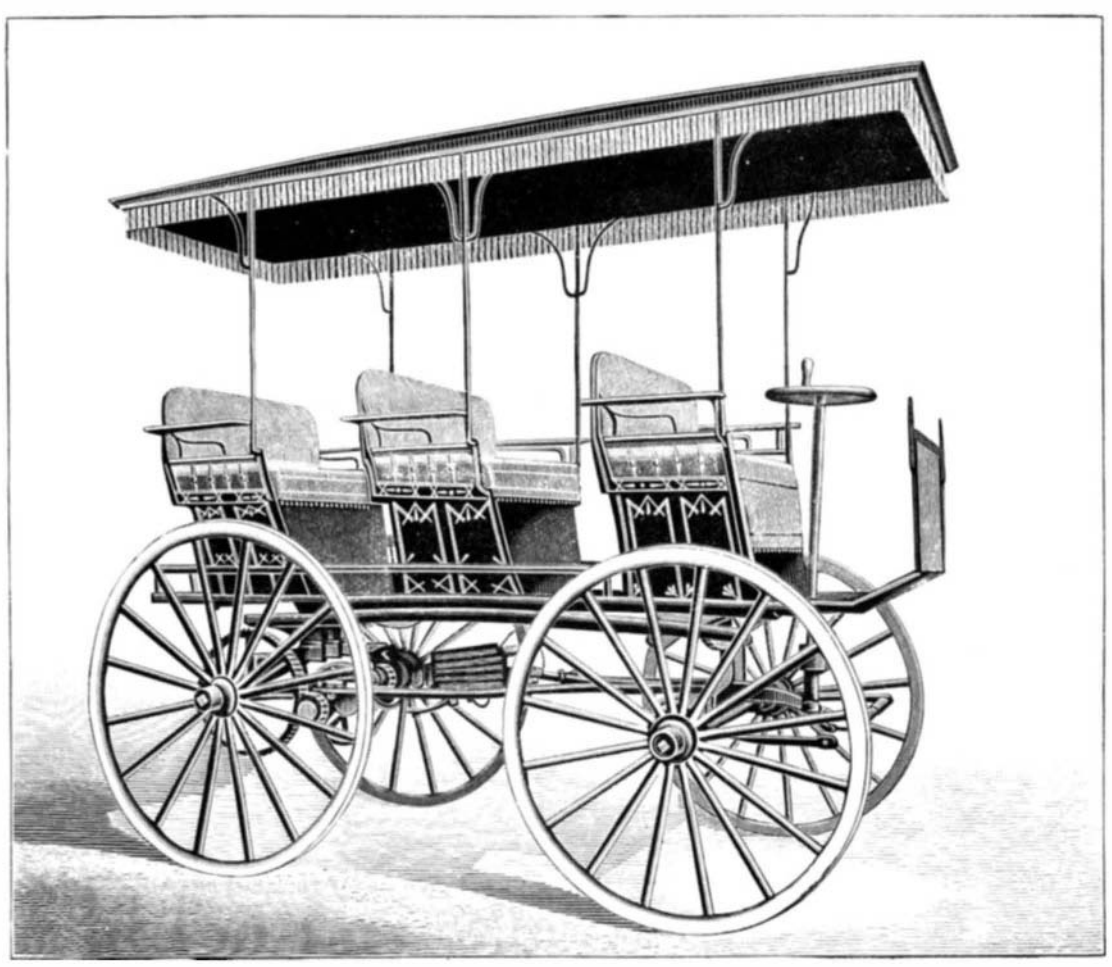
The graceful vehicle illustrated in the accompanying picture is interesting, as being undoubtedly the first carriage propelled by electricity built in the West. It is the invention of William Morrison, of Des Moines, Ia., and was built by Morrison & Schmidt, of that city. It is intended for operation on ordinary city and country roads, and will carry twelve people comfortably, although the inventor says that it could be easily arranged for double that number.

The power is furnished by 24 storage battery cells placed beneath the seats. These accumulators are of Mr. Morrison's own design, and he claims to have produced a battery that cannot be considered an infringement on other accumulator patents. He says that the combined output of the cells is equal to 112 amperes at 58 volts. Each cell weighs 32 pounds, making the total weight 768 pounds. The cells are charged without being removed from the carriage, the process taking ten hours. It is proposed to do this at night.

This motor is of four horse power, although, on a pinch, it is claimed that it can be worked up to eight horse power. It is of the ordinary street car type, with a Siemens armature, but Mr. Morrison claims an improved method of winding, by which the replacing of burned-out armatures is greatly facilitated. As will be seen by the illustration, the motor is sustained by a framework underneath the body of the carriage, and is geared to the rear axle.

The steering apparatus is attached to the forward axle and is controlled by a hand wheel in the front of the carriage. It is claimed that this attachment has been perfected to such an extent that a light touch on the wheel will alter the course of the vehicle. The motor is thrown in and out of circuit by a switch placed in the forward part of the carriage and intended to be moved by the foot of the person guiding the movements of the vehicle. Thus one person is enabled to control the speed of the carriage and steer at the same time. No rheostat is used, the speed of the motor being regulated by the number of cells cut in or out.

Mr. Morrison claims that his carriage has been exhaustively and successfully tested in Des Moines, and that it has been run continuously 13 hours, attaining a speed as high as 14 miles an hour. He thinks that a much higher velocity can be attained if desirable. The carriage is to be soon exhibited in Chicago by Harold Sturgis and John A. Qualey, so says the *Western Electrician*.



AN ELECTRIC CARRIAGE.

### Difference in Eyes.

Mr. James Shaw writes to *Nature* as follows: "I labor under the peculiar inconvenience of having a right eye of normal power and a short-sighted left eye. The numerals on the face of a clock five-eighths of an inch high are visible to the right eye at twelve feet distant; but in order to discern them as clearly with my left eye I require to bring that organ of vision as near to the figures as eight inches. On looking at my gold chain hanging on my breast in daylight, and with both eyes, the chain colored yellow, and toward the left, is perceived by the right eye, while a steely blue chain, another, yet the same, is perceived about an inch to the right and a little higher up. By artificial light the same phenomenon presents itself, but the difference of color is not so apparent; the yellow to the right is only dimmer. Again, when a page of *Nature* is being read with the short-sighted eye, there appears, about an inch to the left, part of the same column, small, and the black, under artificial light, like weak purple. The right hand side of this ghost-like column is lost to the right eye, being commingled with the larger, darker letters seen by the short-sighted left, which cover it like the more recent writing on a palimpsest. Middle life was reached before the discovery was made. These experiences must be gone through with intent, for objects generally being perceived altogether with the right eye, all that the left seems good for is to supply a little more light. The perception of the difference of color is as good with the one eye as the other, and the short-sighted eye can read smaller type. As the inferior animals, so far as I know, have no habit of peeping or looking with one eye shut and the other open, it occurred to me that this ability might be a limited one. I tried the experiment with school children, and to my surprise found that a few were quite unable to keep one eye shut and the other open at the same time, and a few did it with an effort, making in all about a fourth of the number. Adults were likewise under similar limits, but to a less extent. This may be the reason why the discovery of inequality of vision, as Sir John Herschel remarks, is often made late in life. Indeed, he mentions an elderly person who made the unpleasant discovery that he was altogether blind of an eye."

### Something about White Lead.

My subject is white lead. I have been experimenting with it for some time, and am fully convinced that it should be used very sparingly in the painting of a carriage body, and more especially as a putty. You naturally ask why.

What is white lead? It is a corroded metal, which is capable of being brought back to its original state, but with a loss of its weight, thus proving that it has not lost its metallic property of expansion and contraction.

How can we prove this? Let us make a white lead putty taper 2 inches long, 1½ inch at the large end and 1 inch at the small end. Let it get perfectly dry, then have it turned accurately and fit a brass ring to the large end when the putty is at a temperature of 30°. Then raise it to 90° and attempt to pass it through the ring. You will find you cannot do it, thus proving that white lead putty expands at no uncommon change of temperature.

What are its adhesive qualities? Very little in itself. It is unlike glue or other resinous substance, which penetrates the fiber of the wood and in a manner clinches itself; but, like the brick to the mortar, is held by absorption.

How can we prove this? Paint a thin board with three coats of white lead mixed with oil and turpentine (or a brick is still better). When perfectly dry place it under an exhaust pump, and you will find that the white lead coats will part from the wood or brick.

Now, I need not tell you how we usually paint a carriage body, but do we not first coat it with lead and then freely coat it with a matter which has no expansive quality, except when subject to intense cold, and which contracts by heat? We here find that the element which expands the under coats contracts the outer ones. Is it any wonder that our paint cracks and peels off? Or that our putty protrudes and shows? Or can you tell me of a varnish that we can expect to be capable of resisting the laws of nature?

I have no suggestions to offer as to a substitute for white lead. I leave that for others—younger men than myself—and hope that some one will do so. N. J. F.

—*Varnish.*

### A New Tin Alloy which Clings to Glass and Metals with Great Tenacity.

*The American Journal of Photography* recommends an alloy of 95 parts of tin and 5 parts of copper for connecting metals with glass for photographic and other purposes. The alloy is prepared by pouring the copper into the molten tin, stirring with a wooden mixer, and afterward remelting. It adheres strongly to clean glass surfaces, and has nearly the same rate of expansion as glass. By adding from one-half to one per cent of lead or zinc the alloy may be rendered softer or harder, or more or less easily fusible, as required. It may also be used for coating metals, imparting to them a silvery appearance.