Automobile News.

Steam plows are to be used in South Africa for intrenching works.

An English physician has driven a motor carriage 5,000 miles at an expense of only $130.

There is a regular service of automobiles between Newcastle and Sunderland, and other systems are projected in various parts of England.

In England the automobile has begun to figure so frequently at weddings, according to The Motor Car Journal, that soon little or no notice will be attracted by the use of the same.

President McKinley has at last ridden in an automobile, actuated by steam. Washington is an ideal place for motor carriages and should be a good field for companies dealing in them.

An unfortunate accident occurred a few days ago on a gasoline-propelled automobile. The tube connecting the gasoline tank with the motor broke, and as might be expected, the escaping fluid took fire and enveloped the vehicle in a sheet of flame. The occupant was badly burned.

It is stated that automobile omnibuses will be substituted at once for the old horse-drawn stages on Fifth Avenue, New York city. We understand that the omnibuses will not be allowed to be crowded, and a little sign bearing the word "Full" will be displayed when every seat is taken. This is the general European custom.

The New York Medical Journal, speaking of the recent explosion of the gasoline tank of a motor carriage, says: "Some new danger is almost always to be expected in connection with novel devices of the kind, but, on the whole, the power carriage, whether propelled by gasoline or electricity, is probably less dangerous than vehicles drawn by horses."

A gold cup for international competition has been offered by the Automobile Club of France. The first test will be held as near May 1 as possible, the idea being to make the date coincide with the great automobile day at the exposition. The rules which will govern this cup have not been made as yet, and it is expected to arrange racing conditions which will be satisfactory to automobilists of all countries.

A test of a truck made by the Auto-Truck Company was witnessed by the prominent officers and stockholders on November 26. It was of the Hoadley-Knight type and was built at the International Power Works at Providence. The truck was brought down by boat, and was run to the air-compressing station of the Metropolitan Street Railway on Twenty-fourth Street with the charge which it had received in Providence. A fresh supply was taken on, and it was demonstrated that it could be satisfactorily run in the streets.

AN X-RAY DELUSION.

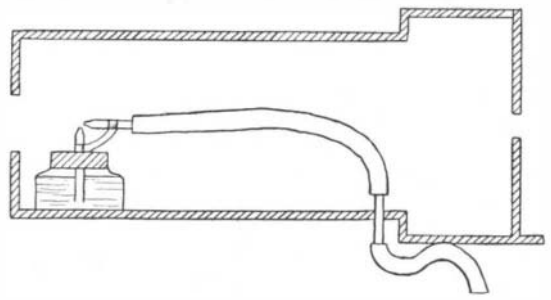
BY GUSTAVE MICHAUD, D.SC.

A Boston firm sells, under the name "X-Ray camera," an apparatus which apparently enables an object to be seen through any opaque substance. It is hardly necessary to say that the X-rays have nothing whatever to do with the phenomenon, which is really produced by a set of four hidden mirrors, that conduct the light around the opaque object. I have recently devised and constructed a little apparatus, which is just as deceitful as the "X-Ray camera," but which is more readily made and gives results by far more astonishing for spectators who have not been told the secret of its construction. It apparently reproduces instantaneously and neatly the interior of the human body, giving to every organ its natural color. The whole operation is performed under the eyes of the bewildered sitter, who watches the X-rays in what seems to be the act of drawing and painting before his eyes his vital organs.

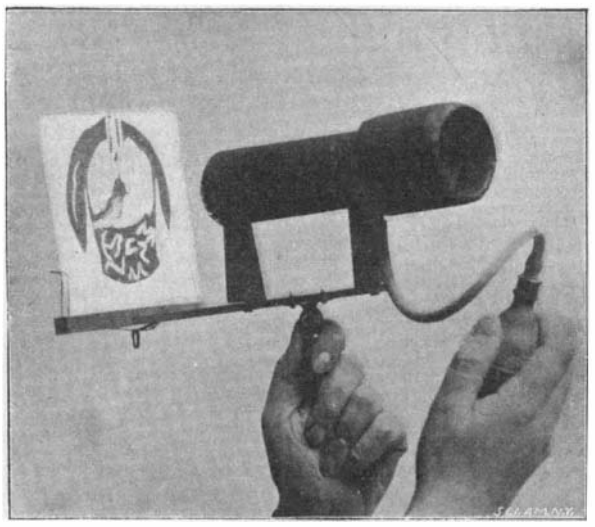
The apparatus looks like the objective tube of a camera, with the plate on which the image is to be produced in full sight of everyone. The apparatus is placed opposite the person whose viscera are to be photographed, and to heighten the effect a lamp may be solemnly placed behind the sitter. The operator invites everyone to look at the white sheet of paper, and presses the rubber bulb of the shutter. A colored image appears instantaneously on the paper. The lungs are of a bright red color, the heart is darker, the veins are blue, the stomach and intestines are of a greenish tint; other parts of the body paint themselves in black on the white paper. This sudden apparition generally startles the sitter; but a few remarks on the healthy looks of his lungs will place him at his ease. The photograph is taken out of the apparatus and passed among the spectators.

Two distinct parts of the apparatus co-operate in the production of that X-ray trick; namely, the sheet of paper and the objective tube.

Before the experiment, the sheet of paper is treated as follows: It is pinned over any anatomical drawing showing the position of the principal thoracic and abdominal organs. If the sheet of paper is not too thick, the drawing can be seen through it. The space occupied by the lungs is then painted with a diluted solution of sulfocyanide of potassium. A more concentrated solution of the same salt is used to fill the space outlined by the heart and principal arteries. A few big veins are painted with a solution of ferrocyanide of potassium. A more diluted solution of the same salt is used for the stomach and a few intestinal folds. The rest of the body is uniformly painted with a concentrated solution of tannin. The whole operation need not take more than five minutes. When the paper is dry, the drawing is absolutely invisible, for all the



INTERIOR OF THE OBJECTIVE TUBE.



APPARATUS FOR PRODUCING AN X-RAY DELUSION.

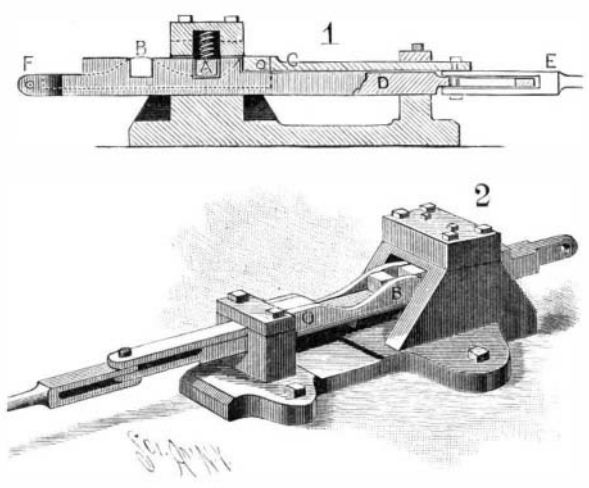
above named solutions are colorless. The sheet of paper is now ready for use in the apparatus.

The objective tube does not contain any lens, but merely a small atomizer filled with a solution of ferric chloride. When pressed the rubber bulb sends air, not as every spectator believes, into a pneumatic shutter, but into the atomizer. As a result a fine and invisible spray of the perchloride of iron solution reaches for a moment the sheet of paper. What follows is easily understood by every student of analytical chemistry.

The reactions between ferric salts on one side, sulfocyanide of potassium, ferrocyanide of potassium, and tannin on the other side, are among the most sensitive of analytical tests, owing to the extraordinary intensity of the red, blue and black colors which originate in these reactions. Hence the instantaneous production of the colored picture.

A SAFETY SWITCH-LOCKING MECHANISM FOR RAILWAYS.

An invention has been patented by William Haney, of Lexington, Ky., which provides an ingenious means for opening and closing railway-switches and for locking the switch-tongue in its adjusted position, to prevent possible accidents.



HANEY'S SWITCH-LOCKING MECHANISM FOR RAILWAYS.

The switch-operating mechanism comprises a shifting-bar, *F*, formed with two transverse notches, in which a spring-pressed locking-bar, *A*, is designed to engage. At opposite sides of the shifting-bar, cam-plates, *B*, are arranged, which are curved so that their highest points are on a plane with the top of the shifting-bar. The cam-plates, *B*, are connected by means of a link, *C*, with an operating rod, *E*, leading to a switch-tower and can be moved independently and with the shifting-bar. The link, *C*, is connected with the rod, *E*, by means of a bolt passing through a longitudinal slot in the shifting-bar.

When the locking-bar, *A*, is in the first notch, as shown in Fig. 1, and it is desired to shift the switch-tongue in an opposite direction, the rod, *E*, is pulled outward, thus drawing the cam-plates, *B*, longitudinally and causing the curved portions to raise the locking-bar, *A*, against its spring. During this motion the bar will remain stationary, because the bolt connecting the rod, *E*, and the link, *C*, is traveling in the longitudinal slot of the shifting-bar; but when the bolt reaches the end of the slot, the cam-plates and shifting bar will be drawn together, until the locking-bar moves into the second notch, thus locking the switch-tongue in adjusted position. The movements are reversed when the parts are shifted to their first position. Since the boxing in which the locking mechanism is contained is covered, the parts cannot become clogged by snow, ice or dirt.

Some Reminiscences of Early Marine Steam Engine Construction and Navigation in America.

At a late session of the Institution of Naval Architects of Great Britain, Mr. Charles H. Haswell, the well-known engineer, who may be regarded as the Nestor of his profession, having recently completed his ninetieth year, presented a second paper on early marine steam engine construction and steam navigation in the United States navy from 1807 to 1850. Mr. Haswell's papers are of great interest in view of the following claims which are set forth in them. According to them, Mr. John Stevens, of Hoboken, N. J., in 1809 applied slides and a crosshead to guide the piston rod of a steam engine. In 1824 James P. Allaire introduced the Woolf engine, the compound of the present day. The first introduction of steamboat towing was made in 1825 by a New York company. In 1826 a fan blower was introduced by Robert L. Stevens. In 1827 J. P. Allaire invented and patented the steam chimney. In 1836 sponsons were first constructed under the water-wheel guards of a steamer. In 1837 the first steam launch was designed and directed by Charles H. Haswell, Chief Engineer, United States navy. In 1839 Francis B. Stevens invented and patented the double eccentric cut-off. In 1842 F. E. Sickles invented the drop valve cut-off; the same year Edwin A. Stevens designed and operated a closed fire-room. In 1844 Charles H. Haswell, Chief Engineer, United States navy, devised the application of zinc to the bottom of an iron vessel and in a marine boiler. In 1846 Capt. John Ericsson designed and applied a surface condenser to the engine of a United States revenue cutter. In 1848 Mr. Pierson improved upon it, and soon after Chief Engineer William Sewell, United States navy, further improved the construction, and in the same year Frederick E. Sickles devised the application of steam to the steering gear of a steamer. The Right Honorable the Earl of Hopeton in the course of some pleasant remarks said: "Gentlemen, may I remind you that Mr. Haswell, the author of this paper, is, I fancy, about the oldest practising engineer in the world. He was Chief Engineer of the United States navy at the time Her Majesty came to the throne, and that was not yesterday. I may also remind you that he was present at the International Congress held about a year ago, and was among the youngest of us. He was here, there and everywhere. . . . I propose that the secretary be authorized to send our best thanks to our veteran friend for his kindness in sending this paper."

Insurance Against Earthquakes.

Dr. Barrata has advocated in the Italian parliament a compulsory insurance against earthquakes. Owners of vineyards and others protect themselves in this way against hail and, therefore, why not against another calamity even more destructive, as they average about 750 shocks a year and certain parts of Italy have occasionally suffered terribly. The idea of the insurance is a shrewd one from the point of view of public economy. It shifts the burden from the exchequer to private purses. The business would be of a peculiarly risky nature, for such an epidemic of earthquakes as has devastated Calabria between 1783 and 1786 might easily bring any ordinary company to bankruptcy. The risk would have to be widely spread, and actuaries would be puzzled to calculate the premiums for different places. Some parts of the peninsula enjoy practical immunity. The great plain of Venetia has never suffered. Rome and Naples are occasionally shaken, although as a rule not seriously, but disaster frequently occurs in volcanic districts, as in Ischia in 1881 and 1883, when the loss both of life and property was serious. Calabria is far the worst as an earthquake region. Over 1,400 people perished in one locality in the period mentioned above.

THE highest observatory in Germany is situated on the Schnee Koppe, the highest summit of the Silesian Mountains, the elevation being 5,216 feet. It will be managed by the Prussian authorities.