A QUADRICYCLE FIRE ENGINE.

We illustrate herewith a quadricycle fire engine that attracted considerable attention at the recent bicycle exhibition at Paris, and which presents unquestionable advantages over the hand engines in use in all places that are too small to afford the luxury of steam fire apparatus.

As shown by our engravings (Figs. 1 and 2), the engine consists of two tandem bicycles coupled by cross-pieces in front and behind and having but a single steering post in front. The free space between the two frames is occupied at the front by a hose reel, in the center by a rotary pump, and at the back by a coupling that allows the pump to be put in communication with a water tap.

This entire affair weighs scarcely more than 130 or 133 pounds, which represents about 33 pounds per man. It will be seen that upon such a machine four trained cyclists can reach a fire at a speed that could never be attained by fire engines drawn by horses.

As soon as the engine has reached a favorable position, the four men jump from their seats, and, while two of them adjust the couplings, a third unreels the hose, and the fourth, turning down the jointed support, raises the back of the machine and throws the pump into gear.

Fig. 1.- THE SCHOEDELIN QUADRICYCLE FIRE ENGINE.

The four men afterward get into their saddles and pedal in situ with a mean velocity that causes the pump to discharge about 4,500 gallons an hour in the form of a stream 100 feet in length in a horizontal direction and about 75 feet upwardly. These figures are those obtained at the trials made at the Palace of Industry on the 23d of last December.

All the preparatory maneuvers require scarcely more than two or three minutes. If, on another hand, we take into consideration the fact that such machines, propelled by men with some little training, can reach a fire in a quarter or a third of the time made by ordinary hand engines, we shall realize how great an interest attaches to the use of them in country places where a fire so easily assumes the importance of a disaster by reason of the tardiness with which the first help comes. Everything, therefore, leads to the belief that this invention is destined to completely revolutionize the fire apparatus of small towns and villages.—La Vie Scientifique.

The Boston Aeronautical Society.

The Boston Aeronautical Society was organized May 2, 1895. Prof. William H. Pickering, of Harvard Observatory, was chosen president, and Mr. Albert A. Merrill, secretary. For several months fortnightly meetings have been held, and at these meetings papers treating of aeronautical subjects have been read and discussed. The members have found these discussions decidedly instructive and helpful.

The objects of the society are to encourage experiment with aerial machines and to disseminate knowledge concerning the great problem of aerial navigation.

Preparations are being made for many interesting experiments, which will be tried at the field meetings of the society, to be held during the coming summer and autumn.

Among other things, the society has undertaken to encourage the fascinating study of scientific kite designing and the delightful sport of kite flying.

The society wishes to circulate its notices and reports from time to time, and it therefore requests all who are in any way interested in this subject, whether as experimenters, students or general readers, to place their names on file, addressing the secretary of the Boston Aeronautical Society, Box 1197, Boston, Mass. An important notice concerning money prizes to be awarded for the best kites will be ready for mailing May 1, 1896.

How the Use of Acetylene Gas Affects Fire Insurance.

Charles A. Hexamer, secretary of the Philadelphia Fire Underwriters' Association, read at its recent special meeting the following interesting paper, an extract of which we take from the Insurance World. He says concerning acetylene: "It is a colorless gas, unaffected by ordinary changes of temperature, of a strong odor, resembling garlic. It combines with some metals, including copper and its alloys, forming acetylides, but will not combine with or corrode iron or steel. This fact is of some value to the underwriter, the question of corrosion of brass chandeliers and burners being of importance. That combinations of acetylene and copper are under certain conditions explosive need not be specially considered, since the amount of such a composition can in no case be great enough to cause any danger even should it be ignited. Mixed with air, in proper proportions, acetylene produces an explosive mixture. Acetylene gas burns with an exceedingly luminous flame of much greater candle power than the best city gas. Furnished to the consumer through underground pipes in a manner similar to the present system of city gas supply, there would be no greater risk from its use than from the use of city gas. In order to cheapen its use, however, it is proposed to supply acetylene gas to the consumer in cylinders, in a liquefied state, under a pressure variously estimated at 750 to 1,000 pounds. It is stated that a cylinder of gas four inches in diameter, four feet high, will contain enough gas in a liquefied state to supply an ordinary ten room dwelling with gas for three months. These cylinders it is proposed to connect directly with the gas pipe in a building; when empty, to be disconnected and a new cylinder substituted. It is necessary to reduce the 1,000 pounds pressure in the cylinder to a small fraction of a pound at the burners. This is done by a Pintsch valve, a rather complicated mechanism.

"Two important questions present themselves at this point: First. What would be the result if a possible fire in the building reaches the acetylene cylinder? Second. What would be the result if the reducing valve failed, and the entire gas pressure in the cylinder were suddenly thrown into the gas pipes in the building? It is stated that, while it is true that an increase of temperature involving the gas cylinder would produce increased pressure, before the pressure would cause a rupture of the cylinder (which is said to be tested to 3,000 pounds) decomposition of the acetylene gas into carbon and hydrogen would result, with no explosive effect. This result, it is claimed, has been obtained by heating a small cylinder of liquefied gas in a fire to a cherry red heat. While this may be true (and similar decomposition of gases—notably hydrogen sulphide, which in a cylinder subjected to heat deposits free sulphur and liberates hydrogen—are known), it remains to be demonstrated whether cylinders of liquefied acetylene gas can be safely heated without disastrous results, the fact being that the quantity of hydrogen liberated equals in bulk the acetylene decomposed; the danger of a rupture of the cylinder, therefore, is not eliminated by the decomposition of the acetylene. The result of failure of the reducing valve, which operates automatically, can be easily imagined: The liberating of a gas at nearly a thousand pounds pressure into gas pipes not intended to carry more than a few pounds pressure must necessarily produce disastrous results.

"From the above it will be seen that the points of interest to the underwriter are the presence of cylinders of liquefied gas in buildings in case of fire, and possible failure of the valve intended to reduce and regulate the slight pressure of gas necessary at the burner. There is no reason why the objection from these points should not be overcome. Cylinders of compressed gas can and should be located outside the building, and a safety valve can be provided to empty the cylinder, discharging the gas into the open air outside of the building, in case the reduction fails to act.

"Besides furnishing acetylene in liquefied state under pressure, it is proposed to introduce small gas machines intended to generate acetylene directly from the calcium carbide. Apparently no special hazard attaches to this plan, provided the gas machine be located outside the building, and provided the calcium carbide be stored in a dry place and free from an accidental contact with water, which, generating the gas, might cause a fire or an explosion by coming in contact with an open light.

"It is too early to formulate rules and requirements for safe introduction of acetylene gas for illuminating purposes. The subject has hardly passed the experimental stage. The result of an accident to a cylinder of the compressed gas brought it forcibly to the attention of the underwriter. That the disaster was the result of the accidental and possibly careless breaking of a valve being experimented with cannot be allowed to modify the deduction to be drawn. As an illuminant, acetylene is so far superior to ordinary city gas that, if the claim made as to the relative cheapness of its production can be substantiated, its general introduction may be expected. A careful consideration of the subject by underwriters' associations is necessary. In the meantime underwriters are wise who carefully consider each application for the use of this new gas in its present state of development, and until proper regulations and requirements have been formulated for its safe introduction, refuse to grant permission for its use in buildings covered by their policies."

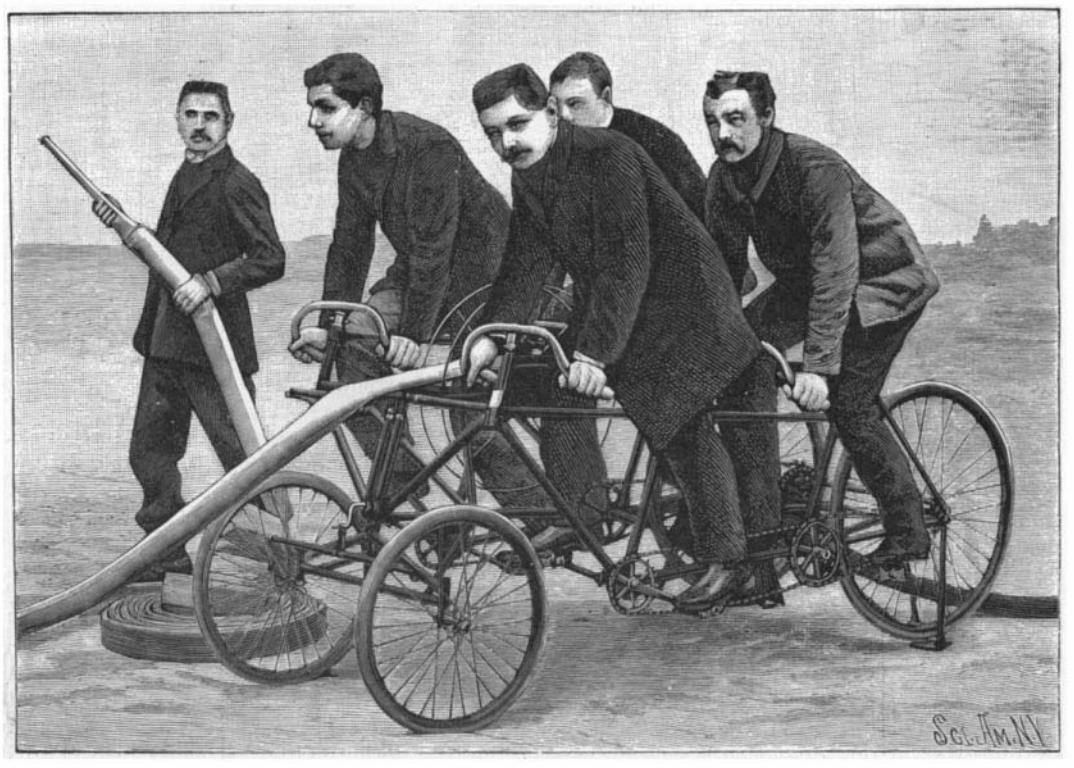

Fig. 2.—THE ENGINE READY FOR OPERATION.

IN the Japanese Imperial Budget for the current year, the sum of $21,639 has been set aside for earthquake investigation. This is a grant over and above the usual expenditure of the central observatory controlling the seismic survey of the country.