Improvement in the Giffard Injector. By M. TURCK.

As this instrument was originally constructed, the cylinder which receives the steam, its nozzle, and the needle which occupies its axis, slid together in the enveloping jacket when it was necessary to change the opening of the annular orifice by which the feed-water mixes with the steam. This arrangement requires two stuffing boxes. M. Turck removes these boxes, and renders the cylinder, nozzle, and needles fixed, and avoids the contact of the cold water with the wall of the steam-nozzle, by interposing between the cylinder which receives the steam and the jacket a metallic piece surrounding the cylinder and its nozzle. This envelope alone is movable, and by its longitudinal motion closes or opens the annular space by which the feed-water enters. The Committee of the *Society for the Encouragement of National Industry* approve of the change and publish the specification and drawing.

Coloration of Glass.

M. Pelouze having observed that the glasses of commerce were colored yellow by carbon, sulphur, silicon, boron, phosphorus, aluminum, and even by hydrogen, was lead to make a series of experiments for the purpose of ascertaining the cause of the identity of the results with such different reagents. The conclusions which he has reached, and which his experiments place beyond doubt, have a very considerable importance in reference to the possible perfection of our manufactures of glass. In fact, his first conclusion is that "all the glasses of commerce contain sulphates." These salts (sulphates of soda, potassa, or lime) render the glass more or less alterable by atmospheric agency, and come into the glass from two sources, either directly from the use of these sulphates as a flux, or from the presence of the sulphate of soda as an impurity in the commercial carbonate. The effect of their existence may be seen by examining many of the panes of glass in our windows, which have been for some years exposed to the air, when the surface of the glass will be found to be corroded and partially opaque like ground glass, and by examination under a magnifier will be found to be covered with crystals. M. Pelouze found these sulphates present from one to three per cent. in all the commercial glasses, window, plate, table, bottle and Bohemian glass: he also found two per cent. of sulphate of soda in a glass from Pompeii. The coloration is now easily explained, the reagents named above reduce the sulphates and produce an alkaline sulphuret which has the property of giving the yellow color.

M. Pelouze proved his proposition by showing, first, that when the glass materials were carefully purified from sulphates, no color was produced by carbon, hydrogen, boron, silicon, phosphorus, or aluminium; and, secondly, that an alkaline sulphuret added to the pure materials produced the color.—*Acad. Sciences of Paris.*