sixteenth century, and seventeenth century writers tell us that the race had increased to such an extent and the breed was kept so good that all importation of the dogs into Germany had ceased.

In the year 1876 there was a great international dog show at Hamburg, and on this occasion the breeders and connoisseurs present failed to establish a difference between the dogs to which the terms "Ulmer" and "Danish" had been applied in Germany; and at the shows held later in Berlin and Hanover, it was decided that there was no such difference, and that the animals to which these names had been given were really the German bulldog of three centuries back.

A fourth breed of dogs, the small but strongly built and plucky bulldog, is too well known to need any further description.—*Illustrirte Zeitung.*

Increasing Moisture in Rooms.

In a communication to the *Sanitary Engineer*, Mr. Henry R. Towne, president of the Yale Lock Manufacturing Company, at Stamford, Conn., says:

"As to my method of using steam for increasing the moisture in rooms, I will explain as follows:

"My house is heated by an indirect steam apparatus. Soon after building it I ascertained, by using a Mason's hygrometer, that in winter the air in the house was very dry, the humidity ranging as low as between 30 and 40 per cent of the dew point. Many sanitary authorities agree that 60 per cent humidity is desirable for health, and my personal experience seems to confirm this view. I thereupon endeavored, in various ways, to raise the percentage of humidity. I used evaporating pans and porous cups in front of the registers. Experimentally I tried wet cloths hanging from pans of water, which, by capillary action, gave considerable evaporation. All of these devices combined, however, failed to increase the moisture more than from 5 to 10 per cent.

"Finally, I made a small connection in one of the indirect steam coils, whereby I could admit a small jet of steam into the air box just under the coil. I at once found that this enabled me to raise the humidity to any desired point, the limit practically being that at which condensation on windows occurs. Since then I have had this arrangement applied to two of the coils on the main floor of my house, with the stems of the steam valves of the arrangement carried up from below, so the valves can be conveniently regulated from the room in which the moistened air is received. These valves are so adjusted as to allow a constant, but small, flow of steam into their respective air boxes. This is mingled with the inflowing air as it enters the heating coil, and is carried with it to the rooms above. The steam is delivered in each box through two one-fourth inch pipes, three inches apart. Under these hangs a small pan which catches the water of condensation as it drips from the ends of the steam pipes. A small overflow pipe carries off the water from these drip pans.

"With this arrangement I easily keep the moisture of my house at 50 to 60 per cent of saturation during winter. It is easy at any time to increase this percentage, but the result in cold weather is to cause rapid condensation on the windows, which is not desirable. A room heated to 70°, with the humidity at 60 per cent, is far more comfortable than one heated to 80°, with the humidity at 40 per cent, in my experience, as the former conditions are far more healthful. I am sure that the general adoption of my method of moistening the air in steam heated houses would be conducive to both health and comfort to all who live in them."

Asbestos Paper.

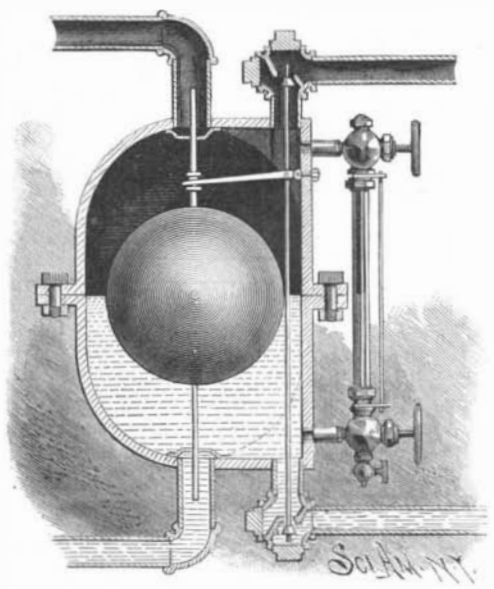
Mr. Ladewig has devised a process of manufacturing from asbestos fiber a pulp and a paper that resist the action of fire and water, that absorb no moisture, and the former of which (the pulp) may be used as a stuffing and for the joints of engines.

The process of manufacture consists in mixing about 25 per cent of asbestos fiber with about from 25 to 35 per cent of powdered sulphate of alumina. This mixture is moistened with an aqueous solution of chloride of zinc. The mixture is washed with water, and then treated with an aqueous solution of ammoniacal gas. The mixture is again washed, and then treated with a solution composed of 1 part of resin soap and 8 or 10 parts of water mixed with an equal bulk of sulphate of alumina, which should be as pure as possible. The mixture thus obtained should have a slightly pulpy consistency. Finally, there is added to it 35 per cent of powdered asbestos and 5 to 8 per cent of white barytes. This pulp is treated with water in an ordinary paper machine and worked just like paper pulp.

In order to manufacture from it a solid cardboard, proof against fire and water, and capable of serving as a roofing material for light structures, sheets of common cardboard, tarred or otherwise prepared, are covered with the pulp. The application is made in a paper machine, the pulp being allowed to flow over the cardboard. Among other uses, the asbestos paper has been recommended for the manufacture of cigarettes.—*L'Industrie Moderne.*

BOILER FEED REGULATOR.

Extended practical use has demonstrated that the machine herewith illustrated secures a uniform flow of water to the boiler, and holds the water in the boiler at whatever water line may be adopted. The tank in which the float rests is connected at the top with the steam space of the boiler, and at the bottom with the water space. Through the float is inserted a rod passing through holes in guides at the top and bottom of the tank. Actuated by this rod is a lever that operates a rod having a valve at both its upper and lower ends—the upper valve being in a pipe that conducts steam from the tank to the pump, while the lower valve is in the pipe conducting water from the pump to the tank. As the water lowers in boiler and tank, the float descends and operates the lever to open the valves. Steam is thus admitted to the pump, which forces water into the tank. As the water rises, the float ascends, and the valves are closed. Thus the pump is kept in motion sufficiently to supply the boiler, in which the water never rises too high or falls too low. The machine is absolutely free from packing, and has no bearing exceeding an eighth of an inch in length, so that friction is reduced to a minimum. The same and a uniform water line can be maintained in a battery of boilers, even if not provided with a mud drum and steam dome, but in such a case it would be necessary to provide each boiler with a machine. The regulator is so attached that it will not interfere with the pump connections in use, and, as shown in the engraving, is furnished with a water glass. A steam



WYMAN'S BOILER FEED REGULATOR.

gauge may also be attached. The simplicity of the device is evident, and its superiority is shown by the fact that its use has produced a saving in fuel, has enabled the engines to do more and better work, has prevented the burning of boilers, and has done away with leaking of the boilers.

This invention has been patented by Mr. Charles O. Wyman, Anoka, Minnesota.

Armor Plates.

In our consideration of the relative qualities of steel faced, or compound, and solid steel plates for the protection of belted, turreted, or barbette war ships, it is obvious, if we are to draw a conclusion from the consensus of nations and the awards of contracts by war offices, that the compound type possesses superior merits to the solid steel. Practically, the fact that over 70,000 tons of the former have been purchased and less than 20,000 tons of the latter, and that France has preferred the production of English metallurgists to that of Baron Schneider by a ratio, from 1880 to 1886 inclusive, of 14,957 tons in favor of the Sheffield armor as against 7,860 tons of the Creusot, would seem to be a conclusive argument for the compound type. We do not propose, however, to be actuated by simply commercial facts in our estimate of the qualities of the competitive systems. To adopt the precedents set by European nations in the character of war material, out of hand, would be not only inconsistent with American tradition, but antagonistic to the interests of domestic enterprise and production. The essays of England, France, and Germany in the direction of both guns and armor, it must be remembered, are yet but tentative.

The question of protection for our war ships is essentially one which we can decide for ourselves, and, when the type to be used shall be determined, can answer for ourselves. Though European contractors first put in actual shape the idea of an ironclad, the inspiration was our own, and the first trial of armor in warfare was in American waters.

The original armor for protected vessels was of wrought iron. At present the two types are of solid or homogeneous steel or of a steel face backed by wrought iron, the latter being known as compound. So far as we know, expert manufacturers in the United States would recommend the latter type, and we refer to such producers of plate as Moorhead & Co., of Pittsburg, and others who have given the matter practical attention.

It is certainly most desirable that armor plate production should be organized in the United States; but the conditions prescribed by the Naval Ordnance Bureau are such as to deter sagacious and experienced manufacturers from even considering the enterprise. The policy of the department in selecting for the protection of our ironclads a material discredited by the great maritime powers, and condemned in its own country, is in our opinion not only inconsistent with an intelligent study of European results, but antagonistic to domestic industry. Past experience of the fairness of the Bureau has been sufficiently discouraging, without offering to producers the chance of a new investment under conditions known on their face to be impracticable.

Had there been a want of specific information as to the most recent trials of solid steel armor in Europe—a circumstance hardly possible in view of the acknowledged employment of officers of our Navy by its manufacturer—the obviously proper course to determine the relative merits of armor would have been to invite European producers to submit plates for trial in this country. It is within our knowledge that some time since, the Sheffield manufacturers of compound plate proposed such a trial to the Navy Department, offering to furnish at the proving ground, without a penny of cost to the department, a plate from 12 to 20 inches thick, 10 to 12 feet long by 6 to 8 wide, to be fired at in competition with solid steel, only conditioned upon the detail of the firing being made public. The proposition has not received the formality of an acknowledgment.—*Army and Navy Jour.*

Does Consciousness Continue after Decapitation?

On the 31st of January, Mr. Hayem read an interesting communication before the French Academy of Sciences upon the effect of transferring the blood of the horse into the head of animals that have just been decapitated. He finds, in the first place, that when the head of a dog is suddenly severed from the body, the eyes for some time execute motions of anxiety, the jaws forcibly open and close, the eyes afterward become fixed, the nostrils dilate, the labial commissures contract, and the tongue contracts to the back of the mouth. A few seconds later, a few respiratory efforts are remarked, and finally the head becomes inert. These phenomena, as a whole, never last more than two minutes.

If, as soon as the decapitation has been effected, the carotids are put in communication with the cubital artery of a horse, the vital manifestations are observed to last for half an hour. Finally, if the transfusion is not effected until the head has become inert, the various vital manifestations mentioned above reappear, but definitely cease at the end of a few minutes.

Mr. Hayem concludes that the extinction of will and sensation is very rapid, if not immediate. Conscious life may, nevertheless, be prolonged for a moment by transfusion, when the operation is performed immediately after decapitation; but in the case of the recall to life of an inert head, nothing but automatic motions, without any trace of will, or consciousness even, can be perceived.

Analogous experiments had already been performed by the learned physiologist Brown-Sequard, who came to the conclusion that the will returns to the head of a dog freshly severed from the body. Since then, this opinion has been submitted to no sort of verification. The experiments of Mr. Laborde with human heads that had been severed from the body for over an hour were performed under conditions where success was an impossibility.

THE following are the dates of the introduction of railways in the various countries from 1825 to 1860:

England	Sept. 27, 1825
Austria	Sept. 30, 1828
France	Oct. 1, 1828
United States	Dec. 28, 1829
Belgium	May 3, 1835
Germany	Dec. 7, 1835
Island of Cuba	In the year 1837
Russia	April 4, 1838
Italy	Sept., 1839
Switzerland	July 15, 1844
Jamaica	Nov. 21, 1845
Spain	Oct. 24, 1848
Canada	May, 1850
Mexico	In the year 1850
Peru	In the year 1850
Sweden	In the year 1851
Chili	Jan., 1852
East Indies	April 18, 1853
Norway	July, 1853
Portugal	In the year 1854
Brazil	April 30, 1854
Victoria	Sept. 14, 1854
Colombia	Jan. 28, 1855
New South Wales	Sept. 25, 1855
Egypt	Jan., 1856
Middle Australia	April 21, 1856
Natal	June 26, 1860
Turkey	Oct. 4, 1860