

**THE HYDROBION.**

BY THE BELGIAN CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

The hydrobion is an apparatus which has recently been invented by Dr. N. von Lorenz, of Marienbrunn, Austria, for the carriage of live fish, and which is based upon the injection of oxygen into the water of the tanks during transportation. Of the two accom-

panying illustrations, Fig. 1 represents the entire apparatus, with its oxygen-injecting devices. The oxygen-injector (Fig. 2) is placed at the bottom of the transportation tank filled with water and fishes. A is a steel cylinder containing compressed oxygen gas. When the cock which closes the cylinder, and which is seen in the figure in the form of a horizontal projection of a disk provided with apertures, is opened, the oxygen escapes from A through the reduction valve B, passes into the regulating valve C, and thence, through a rubber tube, into the oxygen distributor D. This latter consists of a diaphragm of inorganic material, say a porous cylinder having thick walls and a narrow axial bore.

The oxygen finally becomes diffused in minute bubbles through the water containing the fish. These bubbles ascend very slowly through the liquid and become dissolved therein to an extent that depends upon their surface, their ascensional velocity, and the degree of gaseous saturation of the water. The non-utilized excess escapes. This solution of oxygen in water, which is obtained with a minimum consumption of gas, is what keeps the fish alive, and is constantly renewed in measure as it is consumed by the latter. In Fig. 1 is represented a complete arrangement for fish transportation. A is the tank; B, the oxygen apparatus; C and D, the grills with which the latter is covered in order to protect it against injury by the fish after it has been placed in the tank.

The practical manipulation of the hydrobion is so simple that it may be intrusted to any person of ordinary intelligence. The four constituent parts of the apparatus having been fixed immovably upon their base, all that has to be done is to turn on the cock, and take the apparatus by its two handles and place it at the bottom of the tank. It now begins to operate, and it only remains to fill the tank with water and put in the fish. It is necessary, of course, to regulate the discharge of the oxygen according to the number of fish contained in the tank, and according to the consumption of oxygen gas by the various kinds of fish. Finally, it is necessary also to

proportion the capacity of the oxygen cylinder to the time consumed in the transportation. It is of the utmost importance, too, to take into calculation the strict minimum of water that the fish need during carriage, thanks to the hydrobion. The inventor has calculated all such data for most varieties of fish which in all likelihood may be transported alive, so

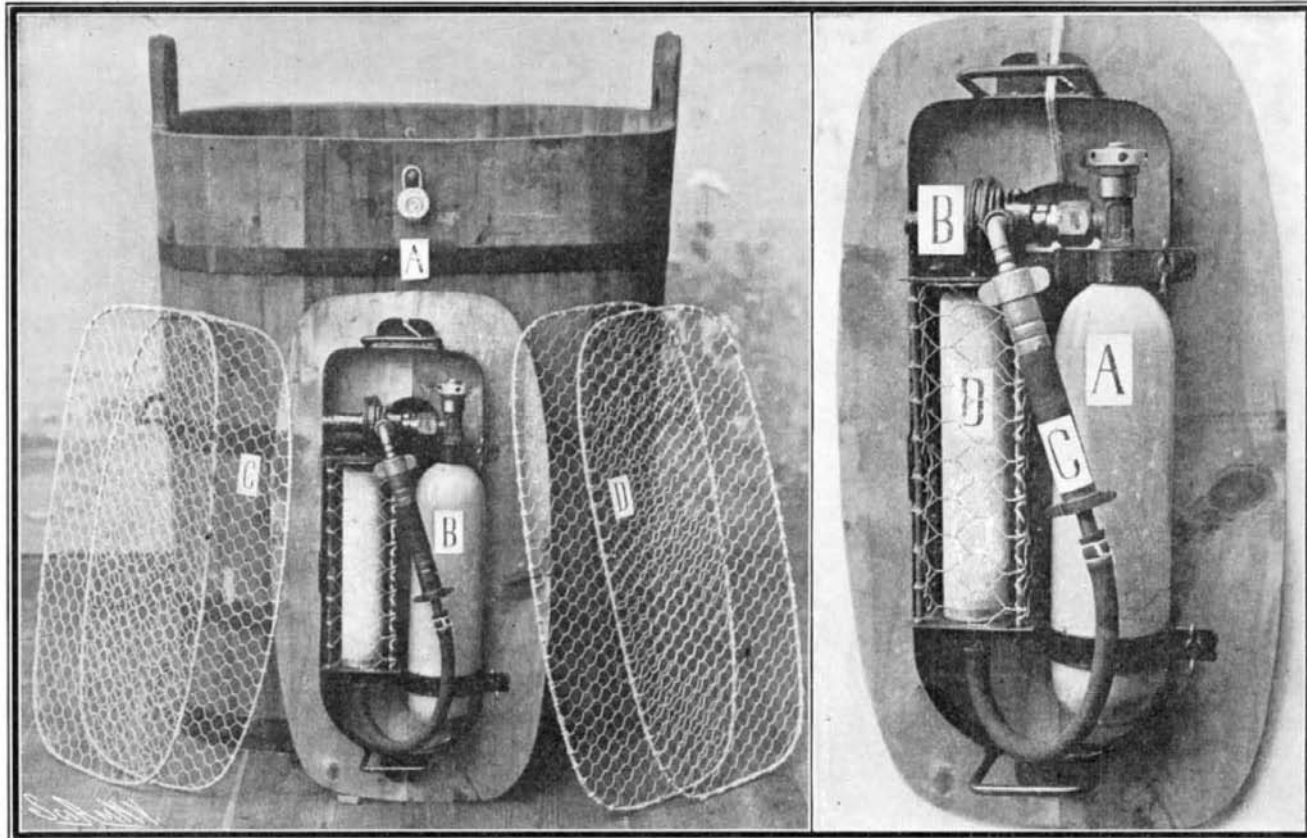


Fig. 1.

AN APPARATUS FOR THE TRANSPORTATION OF LIVE FISH.

Fig. 2.

that any one who employs the apparatus has only to follow the indications determined by the inventor once for all.

The mines in Pennsylvania have already shipped this season over 12,000,000 tons more anthracite than the total shipments of 1902, and all indications favor total shipments this year of fully 60,000,000 tons, making an output far in excess of any previous year's record. This increase is due largely to the great strike, which cleaned up the supplies of anthracite all over the country.

**THE ILLUMINATION OF THE EAST RIVER BRIDGE.**

At about ten minutes before 8 o'clock on the evening of December 19, the shrill whistle of a police boat gave the signal for the general rejoicing at the opening of the new East River Bridge. One whistle after another from the myriad boats that swarmed on the river answered the signal. Every factory and building on the shore that had a siren blew out a mighty blast in answer. The roar grew louder and louder, and was maintained up to 8 o'clock. On both sides of the East River, the streets were crowded with sightseers, who had come to watch the fireworks. The great bridge had been outlined in electric lights. In the middle of the span was a giant American flag formed of red, white, and blue electric lights. Bombs and skyrockets, Roman candles, and all manner of streams of light shot up from the bridge. To the right of the great electric flag, which faded away in this brilliant illumination, there flared up a fine portrait of Andrew H. Green, the "Father of Greater New York." For about an hour there

was a riot of fire and explosion and color, the like of which New York city, nor any other city of this country, had never before seen. The staff photographer of the SCIENTIFIC AMERICAN was enabled to take the accompanying picture at the very height of the illumination. An account of the construction of the bridge, from an engineering standpoint, will be found in the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT of December 19, 1903.

**The Current Supplement.**

The current SUPPLEMENT, No. 1461, opens with an article by W. Frank McClure on "Ice Harvesting," illustrated by four engravings, which clearly show the methods employed. Dr. Bissell presents an exhaustive account of the effect of lemon juice in lemonade upon typhoid polluted water. Lieut. John Halligan, Jr., concludes an excellent paper on the development of the submarine in the direction of increased scope. "In the Land of Opium" is the title of an article which presents an impartial account of the opium industry and of the effect of opium upon the human body. Prof. G. B. Howes writes on the morphological method and progress. Mr. Albert P. Sy presents a very exhaustive account of stability tests for nitrocellulose and nitrocellulose powders. The usual trade notes, electrical notes and consular information will be found in their accustomed places.



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THE ILLUMINATION OF THE NEW EAST RIVER BRIDGE ON THE NIGHT OF ITS OPENING.