

from the west branch of the Rahway River, a grossly polluted stream.

This first unit was equipped with rotary pumps, which did not prove suitable, and subsequent units were equipped with gasoline-operated force pumps.

Various members of the American Water Works Association, who were officers in the Engineer Corps, or in the Sanitary Corps, offered helpful suggestions and contributions toward the development of this unit, which, when placed in operation, gave highly satisfactory results.

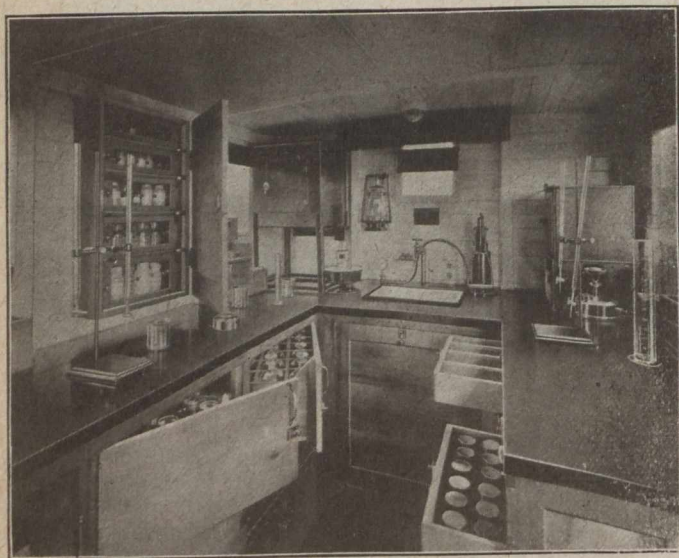


FIG. 4—LABORATORY, LOOKING TOWARD DRIVER'S SEAT

Separate water analytical laboratory trucks were contemplated, and it was ultimately concluded to modify the design to permit the incorporation of suitable laboratory equipment. By building a separate room in front of the truck, using small cylindrical tanks for contact and storage chambers, and placing these tanks under the laboratory benches, a marked saving in the space required was effected.

#### Description of Operation

The water is pumped through a 50 ft. suction line of 2-in. steel-woven suction hose, fitted with bronze check valve and strainer, by the gasoline-engine-operated pump located at the rear of the body. A very heavy dose of chlorine is applied in the pump suction, from a manually-operated solution-feed chlorinator located on the rear wall of the laboratory room. When waters of low alkalinity are treated, soda ash is applied with the chlorine solution.

Passing through the pump, with a relief valve set to operate at 50 lbs. pressure, the water is passed to a specially designed pressure filter, being treated en route with alum through the standard dash-pot arrangement.

From the filter, the water passes through a 1½-in. water meter, thence through a diaphragm pressure-regulating valve to maintain constant back pressure on the chlorinator water supply line, thence through the storage and contact tanks located beneath the laboratory benches, to the point of discharge at the forward left-hand corner of the truck. Just at the point of discharge, the water is treated with sodium thiosulphate solution, regulated and controlled by a special dechlorinating equipment.

These units were designed having in mind the grossly polluted and befouled waters that would have to be treated. Based on the British practice and experience, high doses of chlorine were introduced into the raw water. The filters served to clarify the water, and at the trial tests, absolutely sterile water was obtained at the point of discharge.

It was thought necessary to make provision for removing the excessive residual chlorine that would be in the water after passing through the contact tanks, and a proportional pressure-feeding thiosulphate dosing device was developed. It should be mentioned that provision for dechlorinating was made in accordance with the British experience, which used the process of dechlorination, by the application of compressed sulphur dioxide gas, in all portable units.

On the British truck, the sulphur dioxide was controlled by a standard direct-feed manually-controlled chlorinator of American manufacture. On the American truck, the chlorinator used was the standard manually-controlled solution-feed type.

Control valves for the soda ash and thiosulphate solutions were in the rear of the laboratory below the chlorinator, so that all chemical application could be centrally controlled by the laboratory operator.

The first several trucks were constructed with horizontal pumps, and it was found that special provision was required to eliminate excessive vibration in the laboratory. With this in view, special spring supports were developed. On the later trucks, a vertical force pump was used, and this

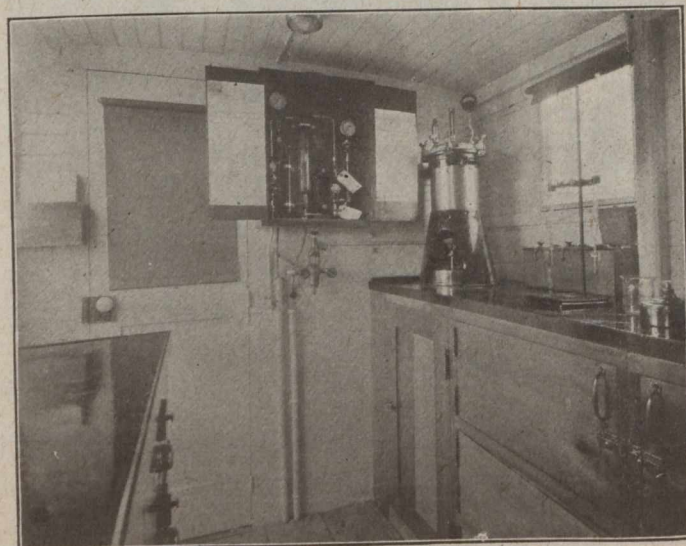


FIG. 6—LABORATORY, LOOKING TOWARD REAR OF TRUCK

so eliminated the vibration as to obviate the necessity of special spring supports.

The development, construction and testing of the first lot of trucks, and the tests and recommendations of the Board of Inspection officers representing the office of the Chief of Engineers, the Engineer Depot and the Sanitary Corps, resulted in many modifications of design and rearrangement of equipment, but not in any change in the basic principles involved.

The value of these units became so apparent that increased facilities were required for their manufacture. An

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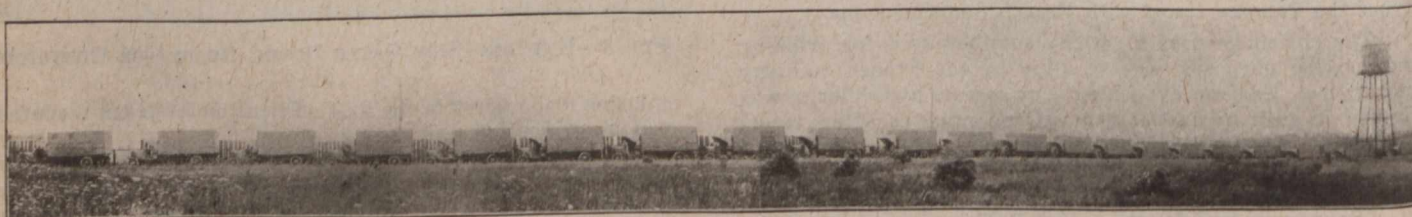


FIG. 5—TRAIN OF MOTOR-TRUCK-MOUNTED, WATER-PURIFICATION UNITS LEAVING FACTORY EN ROUTE TO FRANCE