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DISCUSSIONS

COOPERATIVE RESEARCH

The writer hopes that the suggestions[1] made by Mr. Wolman will be fructified and that the American Water Works Association will appoint a committee to devise a plan for systematic research on some of the problems indicated. The clear and concise statement of these, as made by the author, will be beneficial and should act as a stimulus to all interested in the science of water purification.

The two fields of investigation that appear to the writer to be the most fertile are coagulation and sedimentation, and chlorination.

The methods of procuring suitable coagulation are only just being transferred from empiricism to the realm of science and our knowledge of the governing laws is still very meager. With an ever increasing cost of operation and construction it becomes more and more imperative that these laws should be investigated with a view to eliminating waste and providing a basis for economical design.

The investigations made by the writer in the field of chlorination have convinced him that the superficial strata has scarcely been turned over and that further exploration will amply repay those who undertake it. Chlorination has made wonderful progress during the last decade but it cannot be said that the scientific development has kept pace with the mechanical. One problem needing immediate attention is the nature of the substances that give rise to the iodoform-like odor in some chlorinated waters. Several years ago these were ascribed to the formation of chloramines, but we know now that chloramine itself can be used as a sterilizing agent without producing the iodoform odor. Why do some waters give this typical odor with one dosage and none when the dosage is increased? Sir Alex. Houston, who has met with several such instances in his experience with the London supply, has suggested to the writer that the odor-producing and odor-non-producing dosages give two differently oriented chloro-organic compounds, only one of which causes complaints. This is a hypothesis well worthy of investigation.

JOSEPH RACE.[2]

[1] JOURNAL, June, 1920, page 572.

[2] Mansion House, Hereford, England.

DEFIANCE WATER WORKS

Near the upper right corner of the sketch on page 442[3] is shown a standpipe which the writer believes to have been erected there long ago. If so it has an interesting history.—When the water works property was owned by a private company, the writer advised against further expenditures in the immediate vicinity of the pumping station until after that standpipe had been removed, possibly to a distant part of the city where its usefulness would be greatly increased and damages resulting from a second failure greatly diminished.

H. F. DUNHAM.[4]

CEMENT JOINTS FOR WATER PIPE[5]

It is interesting to note the increasing use of cement as a calking material for cast iron water pipe joints. The Water Bureau of Portland, Oregon, began using cement joints in 1916, and up to and including November 30, 1919, has laid pipe as follows:

SIZE	LENGTH	CEMENT	LEAD
inches	*miles*	*pounds*	*pounds*
6	2.7	3,525	2,507
8	5.4	12,040	4,372
10	0.2	1,200	300
12	3.5	11,054	4,411
16	0.3	1,000	1,120
Totals.....	12.1	28,819	12,710

If lead alone had been used for this work it would have required approximately 50,000 pounds of this material in place of the cement. This represents a considerable saving in money, not to mention the fact that it is our opinion that cement makes a more efficient joint.

In addition to the above, in 1917 and 1918, Water Bureau forces took up and relaid for the contractor on the Sullivan Gulch elimination of grade crossings the following pipe: 583 feet of 30-inch pipe, 3,374 feet of 24-inch, 158 feet of 16-inch, 888 feet of 12-inch, and 787 feet of 8-inch pipe. Most of this pipe was relaid with cement joints, and a particularly interesting feature in connection with the 30-inch

[3] JOURNAL, July, 1920.
[4] Civil Engineer, 32 West 40th Street, New York.
[5] JOURNAL, July, 1920, page 436.

was that when this pipe was first laid in a concrete tunnel under the railroad tracks and the pressure turned on the leakage was at that time considered serious. However, after draining the water from the tunnel two or three times in the following few weeks it was noticed that the leaks were becoming less. In about six months from the time that the main was laid the leakage had completely stopped and all of the joints have remained tight since that time.

Recently the general foreman had occasion to lower about 100 feet of 16-inch cast iron pipe having cement joints. This pipe was lowered approximately 4 feet while under full working pressure and no leaks resulted.

The method of making up these cement joints is practically the same as described by Mr. Pracy.

Up to date we have not had to make any repairs to any of our cement joints and it is interesting to note what Mr. Pracy says relative to such repairs.

F. M. RANDLETT.[6]

WATER WASTE CONTROL

The writer wishes to supplement the remarks of Dr. Hale[7] concerning the assistance that can be obtained by the use of laboratory methods. Whilst in Ottawa, Ont., the writer was called upon to examine samples suspected of being derived from leakages and the method finally adopted was to determine the electrical conductivity by means of a Dionic water tester. This apparatus can be assembled and the test completed within two minutes. In the case of the Ottawa supply the low conductivity, about 20 units, made it easy to distinguish it from ground water, well water, and sewage and very few instances occurred in which the results were in any way ambiguous. The writer would recommend this method for cities in which the conditions are similar to those prevailing in Ottawa because of its reliability and speed, the latter being quite an appreciable factor when excavations have to be kept open pending a report from the laboratory. The electrical conductivity test also affords a rapid means of detecting changes in the supply, for the conductance, or reciprocal of the conductivity, is proportional to the mineral content.

JOSEPH RACE.[8]

[6] Engineer Water Bureau, Portland, Ore.

[7] JOURNAL, July, 1920, page 514.

[8] Mansion House, Hereford, England.