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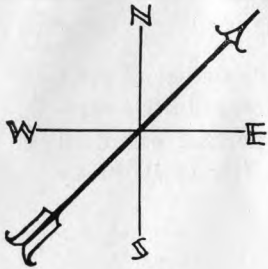
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# THE NOR'EASTER

AUGUST, 1939

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*The Monthly Publication of the*  
NORTHEAST PHILADELPHIA CHAMBER OF COMMERCE  
4700 Frankford Avenue, Philadelphia

JEF. 5916

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The NOR'EASTER serves the northeastern portion of Philadelphia, a national industrial centre, described as a city within a city, a score of communities — a quarter million people — fifty square miles, rich in historical background and material facilities — industrial, commercial, residential, urban, suburban, undeveloped.

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# EDITORIAL

## CITIZENSHIP

**T**HERE is more to citizenship than the mere acceptance of organized benefits. No intelligent group of people can expect to live satisfactorily at the expense of others' efforts and have such a program continue indefinitely. Democratic form of government is based entirely on co-operation. When this is not forthcoming such a form of government cannot function properly.

Regulations and procedure of methods are setup so that all people concerned can participate in the improvements and obtain security for themselves and their dependents. It is as necessary to operate government with a conception of future needs as it is to meet the immediate problems.

No intelligent person can afford to accept the benefits of the community and refuse for any reason to help maintain proper conditions. The best type of governmental representatives are secured when the citizenry gives thought to the issues that must be met, and the individuals who will occupy positions necessary for administration. Sound thinking and

intelligent voting result in good government. There is no alternative. Regardless of how occupied one may be with business, finances or general affairs, there is still a community duty that cannot be overlooked.

The ultimate results of good government or the blame for poor and costly administration lies with the people at large. Philadelphia's position can be improved, able administration can be forthcoming despite any hardships, if the people will give due consideration to efficient candidates at the coming election.

The time has passed to merely place blame for unfortunate circumstances or decry bad conditions. It is time to meet issues squarely and elect capable persons to administer municipal affairs, to endorse sound issues and to take sufficient interest in the city's welfare to assure not only better conditions as quickly as possible, but a broad foundation for a sound future upbuilding, so that the present citizens may enjoy the fullest privileges and preserve their continuity for future generations.

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# WATER FOR PHILADELPHIA

PHILADELPHIA'S water supply is a topic of concern for a short time at various periods and is then generally forgotten during the intervals. Surveys have been made, improvements inaugurated but no attempt to continuously develop an adequate water supply and efficient sewage disposal system has been carried forward to completion. This matter is again attracting attention and may be discussed for some time to come, especially in view of the coming election.

The Northeast Philadelphia Chamber of Commerce has always been vitally interested in Philadelphia water. Ten miles of Northeast waterfront extend along the Delaware River, the extensive industrial plants of the district need sufficient water and the home development of the

area can only be accomplished on proper lines by efficient water and sewage conditions. The organization has been interested in all phases of water development and distribution and sewage elimination. It has co-operated in various movements from time to time, made investigations of its own and held meetings on the subject.

In view of the recent agitation it seems fitting to review the information presented at a special meeting of the Northeast Philadelphia Chamber of Commerce held March 31, 1927. The viewpoints expressed then, by competent engineers, can still be given due consideration, so that taxpayers' money may be spent to the best advantage whenever a comprehensive water supply — sewage disposal project is actually undertaken.

## Present Water Supply System of Philadelphia and Its Possibilities

(By Lyle L. Jenne, Sanitary Engineer of the Bureau of Water, Philadelphia and New Chester Water Company, Chester, Pa.)

A WATER supply problem is divided essentially into two (2) portions — quantity and quality. Quantity is recognized by the consumer more as a function of pressure. It is merely a question of pumpage and pipe line construction. These are definite mechanical problems easy of solution. The quality of water, however, is a much more complex item. It is not enough to maintain a safe water supply. It should also be free from tastes and odors and non-corrosive, and have the sparkling appearance of a well aerated water. Few communities are fortunate enough to have a water supply not needing treatment. A few cities like Camden have a deep well supply, which is purveyed to the consumer without treatment. It is questionable if it would not be advisable to give this water a certain treatment to prevent corrosion. If a community has an artesian supply, this is probably the most ideal, although at present I do not call any to mind. Some communities, like New York City, using a fairly pure upland supply, require only the addition of chlorine to render the water potable. However, the great majority of water supplies require purification.

Water purification is a highly complex chemical engineering process involving aeration and the removal of turbidity, color, bacteria, tastes and odors.

The turbidity content, that is the suspended matter in the water is easily removed. The bacteria also present no special operating difficulties. When we come to taste

and odor, that is another problem. Some tastes are removed by aeration, some may be removed by chlorination, but there are others that cannot be removed by any known feasible process. These are mostly due to trade waste. Hence, the solution for this trouble is to keep such wastes from entering the water supply.

The purification of water is generally accomplished by filtration. There are two systems of filtration — slow sand and rapid sand. By slow sand is meant filtration through sand at a maximum rate less than ten million gallons per acre per day (M. G. A. D.) usually the maximum is six M. G. A. D. The rate in a rapid sand system is one hundred (100) to one hundred and twenty-five (125) M. G. A. D. In the slow sand system there is formed, by micro-organisms in the water, a gelatinous layer on the surface of the sand. It is this layer which removes the fine suspended matter and bacteria from the water. This action is thus seen to be biological in its nature.

In the rapid sand system this biological gelatinous layer is imitated by chemical means. Alum, that is, aluminum sulphate, is added in small quantities and reacts with the natural alkalinity of the water forming a "floc," which is retained on the sand surface forming a similar gelatinous layer. The methods of cleaning the filters in the two systems are entirely different.

As you all know, Philadelphia takes its supply from the Delaware and Schuylkill Rivers. The Delaware is

*Delaware practically free from industrial waste above Philadelphia.*

*Industrial waste gives unpleasant taste to Schuylkill water.*

*Frequent tests show water is of good sanitary quality.*

*Typhoid death rate 1926 — 1.8 per 100,000.*

practically free from industrial waste above Philadelphia. The Schuylkill is not. There are many industrial plants on the Schuylkill discharging their wastes directly into the river, of these wastes those from coke and gas plants give the most trouble. In the past years the tar drips from these plants accumulated on the grounds and in adjacent canals, then the first heavy winter storm flushed this accumulated tar matter into the river and we had a shot of tar taste in the water.

In 1922 we requested the State Department of Health to ask the Schuylkill Navigation Company to systematically, two or three times a week, open the wickets at these various canal openings. This prevented any long accumulation of waste in canals, and since that time we have had no shot of odor and taste in the water. This wicket operation also serves to keep the river freshened up, especially during periods of low flow when in former times the river would become septic. A great reduction of bacteria occurred when this operation was started.

As to the proposed sources of future supply, none of them are pure enough to be used without filtration. The turbidity of some of them at present runs very high during the storm periods, naturally after the construction of impounding dams these high turbidities will not obtain.

The chemical characteristics of these waters will be much better than of the Schuylkill, the alkalinity and hardness especially being lower and running approximately like the Delaware or a little higher. The sewage content will be considerably better than of either at present. Trade wastes can be controlled, but tastes, due to natural organic matter will, at times, be present.

Both the Delaware and the Schuylkill Rivers are polluted. The sewage pollution in each is about the same. The trade waste pollution, however, is greater in the Schuylkill.

The results of our studies of the effluents of various industrial discharges along the river above our intakes were brought to the attention of the Pennsylvania Department of Health. They spent the next summer in an extensive survey of the lower Schuylkill and through co-operation with the industries, brought about a considerable amount of clean up around these plants. Since that time the City has provided for a sanitary patrol of two Assistant Engineers, whose duty it is to constantly inspect the river and these industrial plants. This, through continued co-operation with the industries, has resulted in the prevention of considerable taste and odor producing substances from entering the river.

The sewage pollution will be progressively lessened in the Delaware River by the construction of the intercepting sewers already planned to take sewage now discharged into the river to the Northeast Sewage Purification Works. The

communities on the Schuylkill are also working on sewerage systems and purification works.

Therefore, we may assume that the maximum pollution is occurring in the Delaware and Schuylkill at the present time and will be lessened each year as to both sewage and industrial wastes.

We will now turn our attention to the present system. The first thing that the consumer notices is lack of pressure or short supply. Therefore, water systems have largely in the past been operated from this viewpoint. Many Sanitary Engineers, however, think that this should be a secondary consideration and that water systems should be operated primarily to give the best quality of water possible to the consumer, and the distribution system changed, if necessary, to accomplish this end. Determinations of tastes and odors over the past three years have shown that the best filtered water comes from Roxborough, Belmont and Torresdale with very little choice between them, then comes Queen Lane.

The Roxborough plants were the first built and today give us the best effluent of any in the system, except in the matter of hardness as all Schuylkill water is harder than that from the Delaware. The only pre-treatment at Roxborough is storage. This has a theoretical period of about a week. This compares favorably with the pre-filter treatment at the other plants. This is especially noteworthy because the raw water supply for Roxborough carries the greatest amount of sewage pollution.

The Belmont plant supplies West Philadelphia. Between the Belmont and Shawmont intakes is a long pool formed by the Fairmount Dam. During a large portion of the year this serves as a natural storage basin for the Belmont plant. Last year the B. Coli index, a measure of the sewage pollution, was forty per cent less at the Belmont intake than at Shawmont and twenty-five per cent less than Queen Lane, showing the very beneficial effect of storage on the elimination of bacteria.

The Queen Lane is half rapid sand and half slow sand. The rapid sand system is not as effective in removing tastes as the slow sand; that is a reason why the water from this plant is not as good as the others.

The Torresdale plant, when built, was the largest in the world, and still is the largest of its type. During its first year of operation it produced an average of over two hundred million gallons a day, but has not reached that mark since. The water from this plant is of good quality, soft and generally free from taste and odor of any kind.

The water from all of the plants is always of good sanitary quality. Routine samples are taken two or three times a week from twenty-five points throughout the city to make sure that the water, as received by the consumer, is at all times pure.

## A Sensible Solution of the Water Problem

By Isaac S. Walker, President and General Manager, The New Chester Water Company

AFTER a dormant period of about 2 years, public attention is again being focused on the present and future water supply problems of our city. We have seen Commission after Commission come into being — study, report, recommend, only to pass into oblivion, with no action taken. The first recommendation to obtain a supply of improved quality, from distant streams, dates back to the Civil War, when Chief Birkinbine, in 1864, recommended the impounding of the Perkiomen. The work of the last two Commissions, therefore, cannot be said to be original in the recommendation of this source.

Nothing came of Birkinbine's scheme and 3 years later, in 1867, a special Committee recommended safeguarding the supply drawn from the Schuylkill River by the construction of an intercepting sewer along the east bank from Manayunk to a point below Fairmount Dam. No action was taken, and it was again recommended by the Commission of 1875. It is significant to note from the records that this vitally important measure of protection of the City's water supply, first recommended in 1867, was not completed until 1888. Thousands of lives destroyed by typhoid fever would have been saved if this work had not been so long delayed. The typhoid death rate in 1888 was 78 per 100,000, the highest of any recorded year.

The pollution of the Schuylkill and lower Delaware in the city proper was a subject of serious consideration at that time, and in 1886, Rudolph Hering made his memorable report recommending a supply from the upper Delaware together with Tohickon Creek. Filtration was practically unknown in this country at that time, although the efficiency and benefits of filtration had been demonstrated to some extent in Europe. The small plant at Poughkeepsie, New York, constructed in 1875, was the only municipal filtration plant in operation at that date.

Nothing came of Hering's recommendation in 1886. In the light of water works knowledge at that time, the recommendation was sound, and had it been acted upon, thousands more lives, later blotted out by typhoid fever, would have been saved. Procrastination was the watch-

word for another period of 13 years, during which time the city dwellers were served with a foul, muddy untreated water supply, and died by thousands from typhoid. The situation became so acute, both from the standpoint of the foulness of the supply and an impending shortage, that the seriousness of the situation was finally impressed on the city Council, and Rudolph Hering, the foremost sanitary engineer in the country, was again called upon to recommend a solution. The Hering Commission, consisting of Mr. Hering, Joseph M. Wilson and Samuel M. Gray, presented their report in 1899. In the 13 years, which had elapsed since Mr. Hering's previous report, recommending a distant source of supply, great advances had been made in the filtration of municipal water supplies. The benefits to be derived from filtration had been conclusively demonstrated, and the Hering Commission, instead of following former recommendations for the expenditure of millions in the development of distant sources, proposed a plan for the present filtration system, utilizing the Schuylkill and the practically inexhaustible supply from the Delaware. Construction was begun in 1900, but it was not until 1911 that filtered water was supplied to the entire city.

The record is not one to point to with pride. Of all the investigations, and various schemes proposed, by the numerous commissions and engineers, during the period from 1864 up to the present time, the great outstanding accomplishment was the present filtration system. Since 1911 the city has enjoyed a safe and satisfactory water supply — at least that portion of the supply which is drawn from the Delaware River. Typhoid fever has practically, disappeared from our city, and such few cases as exist are importations or traceable to other causes than the public water supply. The water, more especially the Delaware supply, is clear, sparkling, palatable, safe to drink, comparatively soft, free from tastes, and well suited for general industrial purposes, in all, a very satisfactory water, far superior in quality to that of many cities.

Then you will ask, "What is this so-called water problem?" Why all the wide-spread publicity of the past seven

*Water Commission's Recommendation usually ignored by Council.*

*Council pursues waiting policy. Typhoid fever practically disappeared since universal filtration.*

*Water problem solved by Hering, Wilson, Gray Commission in 1899.*

*Politics hampers management of Water Bureau.*

*Modern business management is sadly needed in Water Bureau.*

*Scientific rate schedule should be adopted.*

*Distant water supply no better than present one.*

*State Sanitary Water Board has power to regulate pollution of streams.*

*Proposed Delaware - Raritan canal would not interfere with Philadelphia water supply.*

years, extending over the length and breadth of the land, the reports and supplemental reports of the two Commissions of 1920 and 1924; the pet schemes and propaganda of numerous other proponents involving expenditures of from 100 to 300 millions of dollars, the hearings, the public meetings, etc., etc. It has been broadcast far and wide that Philadelphia is on the verge of a water famine; that we are drinking filtered sewage. The incalculable harm that this species of propaganda has done to our city will never be known or appreciated.

What then is it all about? What is this "water problem"? In my humble opinion, there is no water problem, as such, other than the problems inherent in all water works, namely, a wise and intelligent policy of constructive planning, development and extensions of the present system and present sources of supply, particularly the Delaware. The water problem of the City of Philadelphia was solved by the recommendation of the Hering, Wilson, Gray Commission in 1899, followed by the construction of the filtration system, involving an initial cost of approximately \$28,000,000. Since the completion of these works, in 1911, the failure to set up a comprehensive plan for development of the existing facilities, to provide for the rapidly growing and future needs of the city, coupled with limited appropriation from Council is largely responsible for the present uncertain and more or less unsatisfactory situation. Under a business management, unhampered by political restrictions, the so-called water problem would not be giving us much concern in Philadelphia today. Of all civic activities, nothing is so vital and important to every man, woman and child in the city, as the water supply, and I respectfully submit that every inhabitant is justified in demanding that a plan shall be evolved whereby the water works of the city shall be operated in a manner comparable to the management of private utilities, possibly under a Board of Water Commissioners, with full management powers, whereby the Bureau may be permitted to stand on its own feet, and function properly as a going concern. This is not intended as a criticism of any part of the present working personnel of the Bureau. The miracle of the situation is that men of the calibre of a large part of the working force, remain in their positions, rendering loyal service, when they are so grossly underpaid. Many of the most valuable men have been lost to the city's service, through this policy, resigning to accept positions with greater remuneration, in other cities and with private water works.

The operation of a water works either municipal or private, calls for the highest management, engineering and technical skill. The maintenance of a properly trained and capable working organization, over which the head of the Bureau has dominant control and power, is absolutely essential. The water works of Philadelphia is truly a great

industrial plant. The health and welfare of all citizens is dependent upon its proper functioning, and it should be totally severed from political subserviency. Politics and efficient management of any public utility have never mixed and never can be made to mix.

All the revenues of the Water Bureau are dumped into one common pot, the City Treasury and money needed for operation, maintenance and extensions and betterments are doled out by Council. The history of the Bureau for a hundred years back, discloses the pleas and appeals of the various Chiefs of the Bureau to Councils, for moneys to properly carry on. It is now time that this condition be terminated, and the Bureau be established on a thorough-going business basis, as a great revenue producing utility.

Looking back through the recommendations of the various Commissions during the past 40 or 50 years, there seems to be unanimity of opinion, on at least one point, namely, the desirability and need of metering the entire system. Universal metering has been preached for the last 15 or 20 years, but the progress toward this ultimate end is slow. Council in 1918 passed an ordinance requiring the placing of a meter on all new services. At the present time there are about 412,000 services in the city, supplying a population of slightly greater than 2 million. Of this total number of services, only 32% are metered, and there remain 280,000 so called fixture accounts still unmetered. The unnecessary waste of water through this vast number of service connections, with no control or check on the amount of water used or wasted, is staggering. How long could the electric and gas companies carry on successfully, if such methods were used in the distribution of their service? Flat rates, in water service, are a relic of antiquity. They compel the careful users to pay the bills of the wasteful users. It costs money to pump, purify and deliver pure water to the 412,000 consumers in this city, and the Water Bureau, as a business proposition, is entitled to receive revenue from every last gallon of water so delivered.

Some benefit is already to be noted in the per capita consumption, which may be partially attributed to the 1-3 metering of services. In 1910, before any meters were in service, the per capita consumption exceeded 200 gallons per day. In 1925, the latest figures at hand, the rate was 165 gallons per day. This rate of consumption, requiring 165 gallons of water, almost three-fourths of a ton — every day for every man, woman and child in the city, is still grossly excessive and furthermore is entirely unnecessary.

The full benefit of metering, in reducing consumption, will not be achieved, until all services are metered. Unless metering is compulsory, the violent objectors, generally water wasters, will be the last ones to change from flat rates.

It has been stated that a reduction of only 10 percent

in the consumption rate may be expected if all consumers are metered. Based on the experience of all metered cities, this estimate is far too low. To secure the full benefits from metering of the entire system, however, a proper and scientifically set up rate schedule must be established. If the present antiquated and discriminatory rate schedule now in use in Philadelphia is maintained, I would not anticipate a per capita reduction of over 15 percent from a fully metered system. If a modern type of rate schedule is established, however, in form as recommended by the American and New England Water Works Associations, I would forecast, without hesitation, that the per capita consumption can readily be reduced at least one-third or 33.3%, which would mean an allowance of 110 gallons per capita instead of the present 165. This is still a very liberal rate of consumption, and is higher than in the vast majority of metered water works. In Chester, which is 100 percent metered, and is a large manufacturing city, the per capita consumption usually ranges from only 75 to 90 gallons per capita.

Under the present Philadelphia meter schedule, liberal allowances are made, which permit very free use of water on metered service. As an illustration, a consumer with a one-half inch meter in his home, pays \$8.00 per year, for which he is permitted to use up to 60,000 gallons per year, or 5,000 gallons per month. Incidentally, 60,000 gallons of water a year is equivalent to 250 tons, which at \$8.00 total cost, is at the rate of 3.2 cents per ton. All water in excess of 60,000 gallons a year is supplied to him at the rate of 5.1/3 cents per 1,000 gallons, or at the rate of about 1.1/4 cents per ton. This rate applies to all consumers, from the small householder to the largest manufacturer. It is evident that no complaint can be made on the score of high water rates, as shown by the above figures. It is so cheap that little consideration is given as to its value, with the consequence that the privileges are abused, and the city is paying the burden of producing about one-third more water than is actually required and receiving nothing for it.

I might point out many discriminatory features of the existing schedule. Take the case of the householder, who is allowed 60,000 gallons a year for his \$8. Annual consumption of water in the average home is far less than this amount, and will probably average not much more than 30,000. In thousands of homes, the total yearly amount of water used will not exceed 25,000 gallons. Is it fair or just therefore, that the consumer using only 25,000 gallons should pay as much as his neighbor who uses 60,000 gallons.

Take the case of two manufacturers, one large and one small, both requiring a 6 inch service meter. Since both make the same demand upon the water system, both should pay the same charge for readiness to serve. Under

the present rates, however, both pay \$1,150 per year, but are allowed 8,625,000 gallons of water for this amount. The use of water in these plants may be altogether different, and while both require the same size meter, one plant may be seasonal, or otherwise use only half or less of the allowance for the minimum.

It is unfair, inequitable and discriminatory, when one manufacturer using only 4 million gallons, or less, should be called upon to pay \$1,150 per year, the same as the other plant, which consumed the full allowance of 8,265,000 gallons.

The only possible satisfactory solution of these discriminatory features, is a so-called service charge form of rate schedule in which every consumer, large and small pays a charge to meet the total overhead charges of the system and maintenance of the plant in readiness to serve them, exactly proportionate to his demand on the system, according to the size of his meter, and in addition he pays a consumption charge for every gallon of water used as recorded on his meter. In recognition of the wholesale principle, and due to the fact that there is much more work on the part of the water department in billing, and maintaining service for a large number of small users, than with one equivalent large user, it is the generally accepted practice to establish a sliding scale of rates, with 3 or possibly 4 slides, making reductions in the consumption rate to large users.

The establishment of such a rate schedule will be met with violent opposition, but most of this opposition will come from the users now benefiting from these discriminatory features. There will of course be opposition from the class of people who will not listen to reason, and object to any changes in the present free and easy plan. I am not presenting this as a new and untried plan. I am suggesting a modern, scientific type of rate schedule, adopted as a standard form by both the American and New England Water Works Associations. Where adopted, it has been well received, as it is soon recognized that it eliminates all discrimination. Nothing galls a water user more than to ponder over the fact that his neighbor used 2 or 3 times as much water as he did, and didn't have to pay any more for it. I therefore, reassert that if it is the honest desire to actually accomplish something on this water question, and the people of Philadelphia will co-operate, here is a method by which the burden on the existing facilities can be reduced, at least, one third, thus eliminating the immediate necessity for new plants to provide for the constantly increasing demand.

Metering of the system was recognized as far back as 1883. After 44 years the system is only one-third metered. A program should be formulated to start this work at once. Meters should be installed by and at the expense of the Water Bureau. It is an economic loss to impose this bur-

don on the consumer, and cause him to pay in exorbitant retail prices and plumber's bills, about twice what the job is worth. I might also introduce here the suggestion that the Water Bureau should also finance the cost of all water mains and service pipes, from main to curb, and should maintain them and repair all leaks without cost to the consumer.

While water is very cheap in Philadelphia, it is not as cheap as the average consumer thinks it is. He is called upon to pay an assessment of \$2.00 per foot for the water main. This is assessed upon owners on both sides of the street, so that the city receives four dollars per foot for a 6 inch pipe, which, under average conditions can be laid today for about \$1.80 per foot. The cost to a property owner, with say 20 foot frontage, for the water installation, including the street main, substantial charge for opening the street, tapping charge, cost of plumber furnishing and installing the service and meter, will probably average in the neighborhood of \$100. Invested at 6 percent this sum would return the consumer \$6.00 per year. He must, therefore, in computing his water bill, add the interest on the capital investment. With the present minimum meter bill of \$8.00, the average consumer is actually paying a water bill of approximately \$14 per year, although it is concealed, as he has forgotten his investment.

All this is fundamentally wrong, and is an economic loss. Private Water Companies are required to finance and maintain all mains, meters and services in the street. The street is City property, and the property owner should not be required to finance any utility structures in the street. He should only have to install and maintain his service from the curb line in to his property. It is of course self evident that if the Bureau finances and maintains all this work, the rates for water service must necessarily be increased to pay the necessary return on the capital invested.

I will now revert to the so called "water problem." I have stated that I do not consider that there is any serious water problem as such, other than a policy of constructive extensions and development of the present Delaware system. To the visionaries and fanatics, obsessed with the delusion that Philadelphia must go to some distant and remote place for its water supply, this statement will be ridiculed. I present it in all sincerity and with some knowledge of the subject.

The grass in the distant field always looks greener than the grass underfoot. The cow in the pasture will poke her head under the three rail fence to get at the grass on the other side, neglecting that which is just as good or better on her own side. It is a human characteristic to imagine that something afar is better than something near at hand.

The earnest recommendations for distant sources were made before we had any knowledge of filtration. They

were sound, and if followed thousands of lives would have been saved. The time to have adopted a distant source of water supply was in 1886, when it was recommended by Rudolph Hering. With nothing done until 1899, and he was again called in, as I previously stated, he reversed his former recommendations, and advised the utilization of the two rivers within the city limits, safeguarded by filtration. This solved the problem, and it remains so solved to this day.

The great problem confronting not only the people of Philadelphia, but of the State and Nation, is the pollution problem. This problem has been one of greatest concern in Philadelphia, even back in the days of the first water works. It is an age old record of violent antagonism and bitter opposition of industrial interests to any proposals for the elimination of polluting matters from the streams. We have it with us to this day.

Let us now consider briefly the reports of the last two Commissions of 1920 and 1924. The 1920 Commission recommended the abandonment of the Schuylkill and Delaware at Torresdale and the adoption of the resources offered by the Perkiomen, Tohickon and Neshaminy Creeks and the Delaware River above Trenton, at a total cost of about \$135,000,000.

The next Commission reporting on May 22, 1924, followed the plan of the previous one in recommending the adoption of the Perkiomen-Tohickon scheme and the abandonment of the Schuylkill river as a source of supply, but reversed the former Commission in recommending the continued use of the Delaware at Torresdale. This scheme was to cost \$91,000,000 for the Perkiomen-Tohickon development, and \$99,000,000 including improvements at Torresdale.

The hue and cry raised by the opponents of this report will be recalled. It occupied the front pages of the press for many months. The most objectionable feature of the opposition was the filtered sewage propaganda. The criticism of the scheme made necessary the revised and supplemental report, which was presented on September 18, 1924. While confirming the recommendations in the report of May 22nd, favoring the Perkiomen plan, together with the continued use of the Delaware at Torresdale, uncertainty and confusion remained due to the statement that the Commission was of the firm belief that the day will come when Philadelphia will require its supply from the Blue Mountains. Further criticism continued, several public meetings were held, concluding with a meeting at the Philadelphia Engineers' Club on January 16, 1925. An Appendix No. 1, was presented at this meeting, discussing the "Relative Suitability of the Delaware and Schuylkill Rivers as a Source of Water Supply." The Appendix cited among other things, that the Delaware River at all times is amenable to purification by modern available processes,

and that the Commission is firmly of the opinion that it is feasible for many years to come, to get a safe and suitable water supply from the Delaware River at Torresdale. In spite of this, the review of the Commission's project closed with the individual suggestion that the Delaware at Torresdale be abandoned, and that the Perkiomen-Tohickon project be supplemented by a supply for the Neshaminy Creek, at a total cost of \$116,100,000.

In consideration of the issue raised as to the quality of the supply from the Delaware at Torresdale, with the public being informed that filtered sewage was their daily diet, I was, with considerable reluctance, forced to enter into this public discussion, to present certain points in connection with the Delaware supply, which I knew had been overlooked, or totally ignored. As General Manager of the Water Works at Chester, a private utility, for the past eight and a half years, and for two years prior to that having held the position of designing engineer on the Philadelphia Sewage Treatment System, I have, of necessity, found it necessary to give considerable study to the Delaware River, both from the standpoint of water supply and sewage disposal. The water supply of the city of Chester and vicinity is drawn from the Delaware River. No other source of supply is available for the 80,000 or more people comprising the present population. Considering the fact that practically all of the sewage of the city of Philadelphia is discharged raw into the river, and that Chester lies only a short distance below, the question as to the desirability of the river as a source of Chester's water supply has of course arisen. Without knowledge of the facts, hundreds of people, including many engineers, have expressed to me wonder and amazement as to our ability to properly filter this water. An understanding of the conditions reveals there is no magic about it, and in the endeavor to correct popular misunderstandings I made our studies the subject of an address, which I delivered before the Pennsylvania Water Works Association in October, 1922, entitled the "Purification of the Chester Water Supply with Special Reference to the Pollution of the Delaware River." This paper is on record. In this, I pointed out the operating performances of our filter plant, the delivery of a water which will compare in appearance and bacteriological quality with practically any water in the country drawn from a surface supply, and a typhoid record at that time of only 1.7 per 100,000. The particular purpose of the paper, however, was to throw some light on the character of the raw water of the Delaware River opposite Chester. With the knowledge that the conditions at Chester applied equally as well to the conditions at Torresdale, I presented the results of our studies, first in an article in the Evening Public Ledger of June 5, 1924, and later at the meeting at the Engineers' Club on January 16, 1925, and in numerous other newspaper articles. All this is on record, and needs

only brief repetition here. The essential point is as follows:

Our intake at Chester lies  $17\frac{1}{2}$  miles below Market Street, Philadelphia. Practically all the sewage of Philadelphia is discharged into the Delaware and Schuylkill, raw, above the intake. In a non-tidal river this sewage would be carried directly to Chester in a comparatively short time. Fortunately the river is tidal, and tides travel on the average in one direction only 8 miles, when they reverse, and run back nearly the same distance. Our studies indicate that the average rate of progression of the the river toward the ocean is only about 0.2 miles per tide or 0.4 miles per day opposite Chester. Let us follow then the journey of a particle of sewage discharged into the river at Market St., Philadelphia, say at the beginning of an ebb tide. In about 7 hours it has traveled down river some 8 miles, when it turns and comes back toward Philadelphia, to within less than a quarter mile of its starting point. The difference between  $17\frac{1}{2}$  and 8 miles, or  $9\frac{1}{2}$  miles must be made up by successive oscillations of the tide, gaining 0.4 mile per day and it is thus evident that based on average conditions, it will require about 24 days before this particle reaches Chester, and traveling 32 miles per day, it will have covered a distance of about 760 miles in its journey. In its long interval of contact with the natural oxidizing agencies in the river water, it is largely destroyed and eliminated as a menace to the Chester Water Supply. In such manner is the sewage from the towns located above the Torresdale intake, oxidized and destroyed.

With a far greater burden than exists at the Torresdale plant, or rather, than will exist when the sewage works are completed, we are able to treat the Delaware water at Chester, and practically on 365 days out of the year, deliver a water of zero turbidity, averaging only 1 to 2 bacteria per cubic centimeter, and free from *Bacillus Coli*. No typhoid exists in Chester, other than a few imported cases. In 1925 there was not a single death reported due to typhoid. In 1926 there was one death.

We have trouble occasionally from objectionable tastes due to certain industrial wastes discharged into the river, and which are not amendable to the natural oxidizing agencies, but, almost all water works using surface supplies are subject to occasional bad tastes, even from pure mountain sources. The selection of the Blue Mountains, the Perkiomen or any other source would be no guarantee that objectionable tastes would not be experienced at times. In fact, I will go so far as to express an opinion that tastes will be more likely from such impounded sources than from the lower Delaware River.

We have taken care of the sewage discharged into the Delaware and its tributaries above Torresdale, not forgetting that the states of Pennsylvania and New Jersey are requiring the cities and towns along the river to install

sewage treatment works, which will assure practically complete protection. Let us now consider the sewage from Philadelphia now carried by the flood tides to the Torresdale intake. Scant consideration has been given in all Commission reports and other schemes, to the fact that Philadelphia, since 1914, has been committed to a project by State demand, for the treatment of all sewage of the City, involving an expenditure of over 50 million dollars; that the primary purpose of this project was the protection of water supply at Torresdale, and that the first work done was toward this end, by the construction of the Northeast Sewage Treatment plant at Wheatsheaf Lane. It is almost inconceivable that in the face of all the studies, plans, investigations, surveys and work actually accomplished on this plan, it is studiously ignored, and recommendations made to spend hundreds of millions on a distant source of water supply. Fifty millions or more dollars to be expended on a project of sewage treatment, ordered to be installed by the State Department of Health 20 years ago, as a protection to the water supply of Philadelphia and communities below, and not used for what it is worth.

I understand the city has already expended on this work, completed or under contract, about \$15,000,000, and is committed to an appropriation of about \$3,000,000 annually for the next 13 years, to complete the program. It is only necessary to complete the northeast plant to afford protection to the water supply at Torresdale. Gratifying progress is now being made, and I am informed that bids will be opened soon for the construction of the intercepting sewer along the Delaware River, from City Line to the Wheatsheaf Lane treatment plant, at an estimated cost of \$5,000,000. All sewage, now entering the river in close proximity to the Torresdale intake will thus be conveyed to the treatment plant, which lies about  $5\frac{1}{2}$  miles below.

In the discussion of  $2\frac{1}{2}$  years ago, I offered the suggestion that as tides travel only about 8 miles, if the intake at Torresdale were to be moved upstream about 3 miles, it would thus place it above the point where the effluent from the Wheatsheaf Lane sewage plant could not reach it on flood tides. Knowing the results obtained at the Torresdale plant at present, with raw sewage discharged in close proximity to the intake, I do not fear the ability of the plant in the future to handle the possible brief contact of the greatly diluted settled sewage effluent from Wheatsheaf Lane. By moving the intake 3 miles up river, however, the skeptics may be assured that sewage from Philadelphia cannot back up to the water works intake.

In the various schemes presented for a new water supply, I believe the public has been led to think that all of the suggested new sources would furnish a wonderfully pure supply. This is far from true. Water, as soon as it descends from the clouds, and touches the earth, begins to pick up pollution. Pollution is a relative term, as all waters

are more or less polluted. Regardless of the source from which it is obtained, the water supply of Philadelphia must be filtered and sterilized before it is used. It is evident, therefore, that it is only a question as to the degree to which it is polluted, and the ability of the filtration plant to handle it. Pollution will be found on the impounded mountain lake from gunners, campers, bathers, fishermen and automobilists. Pollution will be found on the impounded Perkiomen, the Tohickon, the Neshaminy, the Upper Delaware. A substantial population already exists on these water sheds. Pollution already exists in substantial degree on the Delaware above Trenton, from the large cities on the Lehigh. Furthermore, no one can forecast to what degree the pollution of all these suggested sources will be increased in the next 50 years.

I therefore maintain and reiterate that our water problem was solved when our filter plants were completed in 1911; that our big problem is the pollution problem, and the safeguarding of our streams from contamination by sewage and vile industrial wastes. This has been a continuous and never ending problem for many generations, and it is a source of gratification that great strides are now being made and results are being actually accomplished toward the ultimate solution of this menace to all waters of the country. A drastic bill for stream protection is now before our State Legislature. The Sanitary Water Board of the State, created in 1923, has been vested with large powers for regulating pollution, and has been successful in securing the co-operation of many industries in reducing such pollution. There is an insistent demand by the public that the foul pollution shall cease, and that our streams shall be made clean.

Are all these factors to be ignored, and the taxpayers of Philadelphia be called upon to take on the additional burden of carrying charges on an expenditure of 150 or more millions on some remote supply? We are told that \$75,000,000 is already available and that \$7,500,000 can be appropriated yearly for the next 10 years. Regardless of the ability to appropriate, for every additional million dollars invested in water works, there are interest charges to be met of approximately \$50,000 for a long term of years, which is equivalent to an increase of 12 cents on each of the 412,000 water consumers in the city. Multiplying this unit increase by 150, means an increase of \$18 per annum to be added to the average water bill, if it were set up where it belonged, and not concealed in the general tax.

In connection with the continuation of the source of supply at Torresdale, the assertion was made some years ago that the construction of a proposed sea level canal by the government and New Jersey, from Bordentown to Raritan Bay, would render the water of the Delaware River salty below Trenton, and put the Delaware from

that point down, out of business, as a source of water supply. I have given considerable study to this assertion, and it is not in accord with the findings of the Army Engineers, who designed the project. There is no immediate indication that this canal will be built at an early date, or that it will be a sea level canal. If so built, the Engineers' calculations indicate there is no possibility of sea water backing up through the 43 mile long canal from Raritan Bay to the Delaware River.

Up to this point I have not referred to the present Schuylkill supply. The last two Commissions recommended its abandonment. The Schuylkill River above Philadelphia is pretty badly polluted at many points from its source down to Philadelphia. Practically the full available minimum flow is already utilized. The Schuylkill filter plants turn out a safe and generally satisfactory water, subject at times to disagreeable tastes, principally due to trade waste pollution, or to lack of aeration when the river is covered with ice.

As a general proposition, considering the accomplishments cited above in the reduction of trade waste pollution, and the live public clamor for a general clean up of streams, I am of the opinion that if an adequate sanitary patrol corps was established and maintained to investigate and inspect all points of pollution, working in co-operation with the State Sanitary Water Board, much could be accomplished, and this source be maintained with practically complete satisfaction to all consumers.

I conclude by again repeating that in my opinion there exists today no problem of a new water supply for Philadelphia, — that the Delaware River at Torresdale, properly

filtered, and upon the completion of the northeast sewage treatment works constitutes a safe, inexhaustible and altogether satisfactory source of water supply for the present and the future, and that the real problems confronting us are two:

First — Ways and means to bring about radical changes in the present Water Bureau set up, whereby it is established as a thorough-going business concern, unhampered for money to properly expend, maintain, modify, develop and adequately operate the existing works, and extend and enlarge its distribution system and reservoirs to maintain adequate pressure; to meter the entire system and establish the meter rates on a scientific basis; to free the Bureau from political dominance.

Secondly — The support, interest and co-operation of everyone in demanding and continuing to demand that the vile pollution of the streams and rivers of our State shall cease, and our streams be made clean. Many of them are dumping places for filth of every description, and are a disgrace to civilization. Many water works have found it necessary to change their source of supply due to such contamination, by industrial wastes. And it is proposed and possibly contemplated to abandon our present sources for Philadelphia, and spend hundreds of millions on new sources, because of this pollution. We have been slow in correcting our sins in this respect, and have been the chief polluter of our own water supply. This is being rapidly corrected, however, and we are now in a position to demand that outside offending communities and industries on both the Delaware and Schuylkill, above Philadelphia, comply with the State laws and cease their pollution.

### *In Memoriam*

**EDWARD R. SIMPSON**

**DIED JULY 14, 1939**

Was a Northeast Philadelphia coal man for many years.

He was a former Vice President of the Northeast Philadelphia Chamber of Commerce.

### *In Memoriam*

**HOWARD J. SIEGFRIED**

**DIED JUNE 27, 1939**

Mr. Siegfried was a retired druggist, having operated a drug store in the Frankford section for many years.

He was a member of the Northeast Philadelphia Chamber of Commerce from its organization.

# Factory Employment in Pennsylvania

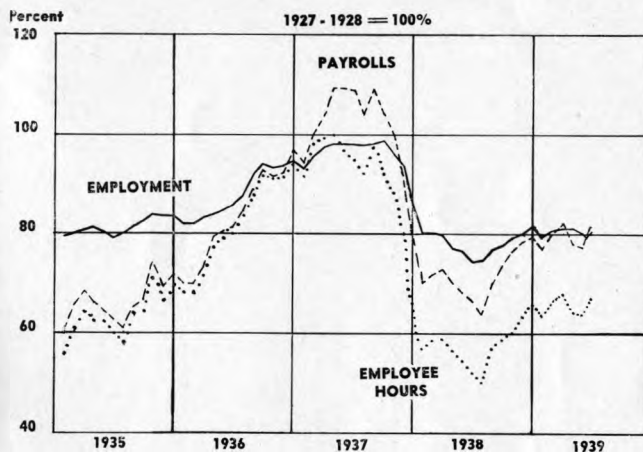
ACCORDING TO STATISTICS BY FEDERAL RESERVE BANK OF PENNSYLVANIA

**E**MPLOYMENT in Pennsylvania factories increased about 1 percent from May to June and wage disbursements showed a gain of nearly 5 percent, according to figures released by the Federal Reserve Bank of Philadelphia. These gains, in a month when manufacturing activity declines somewhat, reflected the unusually well sustained demand for certain textiles, shoes, and miscellaneous heavy goods.

The current level of employment is more than 9 percent above a year ago, when manufacturing activity was approaching the low point in the 1937-38 recession, and payrolls in this same period have increased nearly 24 percent. The number of workers employed and the volume of wage disbursements in June, after having declined more than seasonally in the preceding month, were only fractionally below the peak reached in March.

In industries manufacturing consumers' goods, the most substantial increases in the latest month were at woolen and worsted and men's clothing mills, and at plants producing shoes and leather goods. Activity at hosiery mills was sharply curtailed in June, when there is usually a small increase, the decline being due, in large part, to the current heavy goods, increases from May to June were reported by high cost of raw materials. Among industries producing

heavy goods, increases from May to June were reported by plants manufacturing nearly all types of metal products and by producers of building materials. The sharpest increase among individual lines was at railway repair shops.



Working time in June increased slightly for the second successive month, averaging nearly 36 hours a week, as against about 35 in May and 31.5 a year ago. Hourly earnings, approximating 69 cents, were the largest since January and about the same as in June 1938.



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