

697.5

AMERICAN

DISTRICT STEAM COMPANY.

---

HOLLY SYSTEM

OF

DIRECT AND EXHAUST

STEAM HEATING

FOR

CITIES AND VILLAGES

THROUGH

PIPES LAID IN THE PUBLIC STREETS.

---

LOCKPORT, N. Y.

# AMERICAN DISTRICT STEAM COMPANY

## HOLLY SYSTEM

OF

Direct and Exhaust Steam Distribution in Cities and Villages

FOR

HEATING AND POWER.

---

### OFFICERS.

R. S. BISHOP,	- - - - -	PRESIDENT
W. C. ANDREWS,	- - - - -	VICE-PRESIDENT
I. H. BABCOCK,	- - - - -	TREASURER
B. D. HALL,	- - - - -	SECRETARY
BIRDSILL HOLLY,	- - - - -	ENGINEER

---

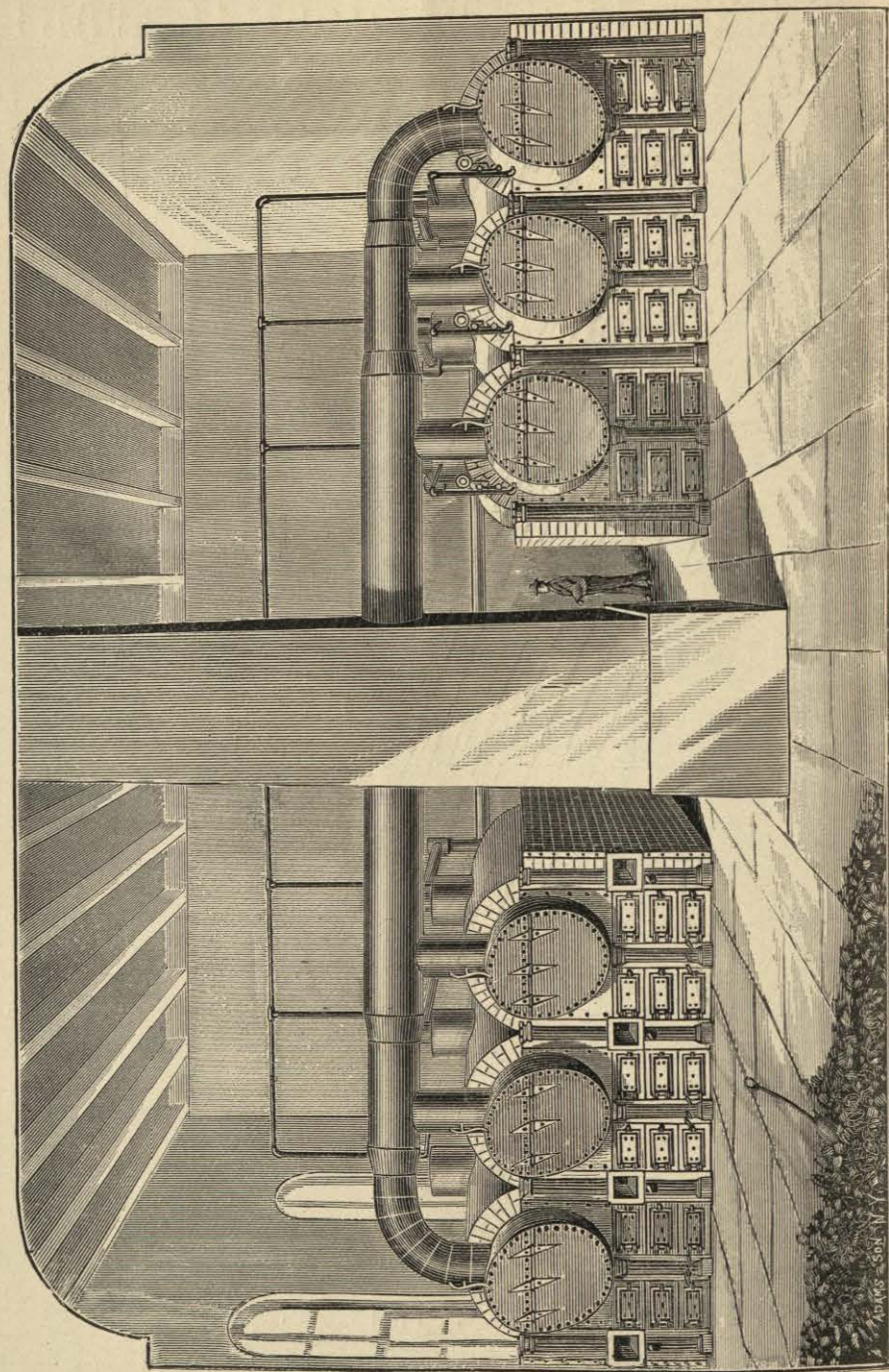
OFFICE:

LOCKPORT, N. Y.

---

1892.





Sectional View Inside of Small Boiler Station.

## The District System of Steam Distribution.

The tendency of the age is to a consolidated service in all matters relating to the necessities or comforts of the people. Particularly is this so in closely settled communities.

By a division of labor, the few minister to the wants of the many.

Systems of lighting by gas, and of water supply through underground pipes from a common source, have been in use for many years. And later, the electric current generated at a central point is conveyed to light our streets and our buildings. These are now regarded as a necessity in every well ordered community.

The world's comfort and convenience having been so well subserved, why should not this beneficent provision of

### CONSOLIDATED DISTRICT SERVICE

be still further extended?

For eight months of the year we require artificial heat. There is no living without it; so we store fuel and build fires in our houses, requiring much daily labor and care, and risk to person and property.

The question then arose: Why can we not have heat for daily use supplied to our houses, stores and public buildings from a central station, the same as water and gas are now supplied?

Mr. Birdsill Holly, the inventor of the system of direct pumping and distribution of water, said it could be done through underground mains; and to prove it, in the face of much opposition, incredulity, and even ridicule, an experimental plant was constructed at Lockport, N. Y., in 1877, and many houses, stores, offices and churches were successfully heated through the winter.

The plan was a success from the start. It was popular with the people and successful as a business venture.

At no time since have the Company's patrons been without steam a day during the heating season.

About seventy-five central steam heating and power plants being now in successful operation in as many different cities and villages, under what is popularly known as the "Holly System"; it may

1090-13307 TCF



appear superfluous to enter into a description in detail of what the system embraces, but we will say in brief that the

#### DISTRICT SYSTEM OF STEAM DISTRIBUTION

is a steam generating station, in capacity depending upon the amount of service to be performed ; it may be one boiler or an aggregation of boilers ; mains of wrought iron pipe radiating therefrom, laid under the streets and protected so as to prevent undue radiation of heat, with provision for the expansion and contraction of the iron ; from the mains, services taken off and leading to the buildings on either side of the street ; in the buildings, whether residences, stores, churches, or public buildings, radiators of some kind to contain steam at a reduced pressure, and measured to each customer through a meter.

The same generators and system of street mains and services supply steam for power. It may be to run elevators, to pump water, to generate electricity for lighting on the premises ; to do all the varied branches of manufacturing required by industries in large cities.

The system which brings

#### FIRE TO YOUR DOORS IN PIPES,

with which to warm your apartments, cook your food, wash, dry and iron your clothes, run your steam engines, with steam hose clear the snow from the streets, heat and ventilate your school houses and public buildings, extinguish fires, and, in fact, do all and everything that either fire or water (for steam is both) may accomplish in the domestic economy of cities, at a cost below what you now pay for the uses of fires ; and what is especially interesting to cities where soft coal is used, without soot, smoke and ashes, with their vexatious train of coal buckets and ash barrels, is a system of such far reaching benefit that it has come to stay.

Your heat in the form of steam is

#### ON TAP

night and day. You may regulate it in your apartments by merely the opening or closing of a valve. You have no care, you provide no fuel, you avoid the risk of fire, and yet you are always warm. What other system contributes so much to the happiness and comfort of the people ?

The testimony of physicians is that there is less sickness among the residents whose homes are warmed by District steam. Where there are children and ladies, often in delicate health, and old people whose

life is spent mostly within doors, it is important to have a uniform degree of temperature in our houses ; and that the air we breathe should be free from coal gas, which is seldom the case where stoves and furnaces are in use. In our capricious climate this immunity from sudden changes of the weather can only be secured where your heat is on tap the same as your gas and your water.

The popularity of

#### DISTRICT HEATING

is illustrated in the natural gas regions where hundreds of homes are heated from under ground pipes. The quality of the heat thus obtained is inferior to steam heat. And the natural gas resources after a time give out. But a steam system with its battery of large boilers, and an exhaustless supply of cheap coal is perpetual.

There are several applications of the district plant for supplying steam in cities. FIRST, we have the

#### HEATING SYSTEM

proper, which does not run during the summer months. From these plants are heated, houses, stores, offices churches and public buildings. It is run on comparatively low pressure. Steam is kept on night and day during the heating season, and is supplied from the boilers direct, at a pressure depending upon the size of pipe employed for its conveyance, and the amount of steam required to supply customers. The smaller the pipes used for a given supply of steam the higher will be the pressure carried. The steam as it enters the building is reduced to the ordinary pressure for heating purposes ; say one to three pounds. Such a system in operation is

#### SIMPLICITY ITSELF.

There is no complicated machinery, no engines, no pumps, no forcing process whatever in the delivery of the steam from the central station to its hundreds of consumers.

The boiler pressure circulates the steam to the extremity of the line of pipe, no matter how extended. The quality of steam is not affected by distance. Temperature and pressure correspond at all times. Hence, whereas we carry steam under a given amount of pressure we know what the temperature of the steam will be, and we know that steam a half mile away from the boiler station will be as *dry* as ten feet away at the same pressure.



SECOND, we have

#### HEATING AND POWER PLANTS.

These are what may be termed mixed systems, furnishing steam for all classes of engines, both large and small, and using much of the exhaust from the engines to heat the buildings in which they are located, and adjoining buildings. Other buildings are heated with steam direct from the mains. These plants carry higher pressure, as high as is necessary to run the power which is connected to the steam lines. For heating, the steam is reduced to the ordinary house pressure by our regulating valve.

Some of these plants run hundreds of engines of varying capacity from 1 to 2500 H. P., and at the same time supply several hundred buildings with steam for heating.

The question may be raised whether there is not an element of danger connected with the laying of steam mains for power under the streets; whether the pipes may not explode and thereby endanger life?

The answer is that no such pipe has ever yet exploded, and no life has ever yet been sacrificed nor a person injured from such a cause in connection with any plant constructed under the "Holly system." And none ever can occur, for the reason that the conditions which exist in steam boilers which sometimes cause explosions with deadly effect, are entirely absent in the steam pipe which carries only steam.

The THIRD application of this plan is

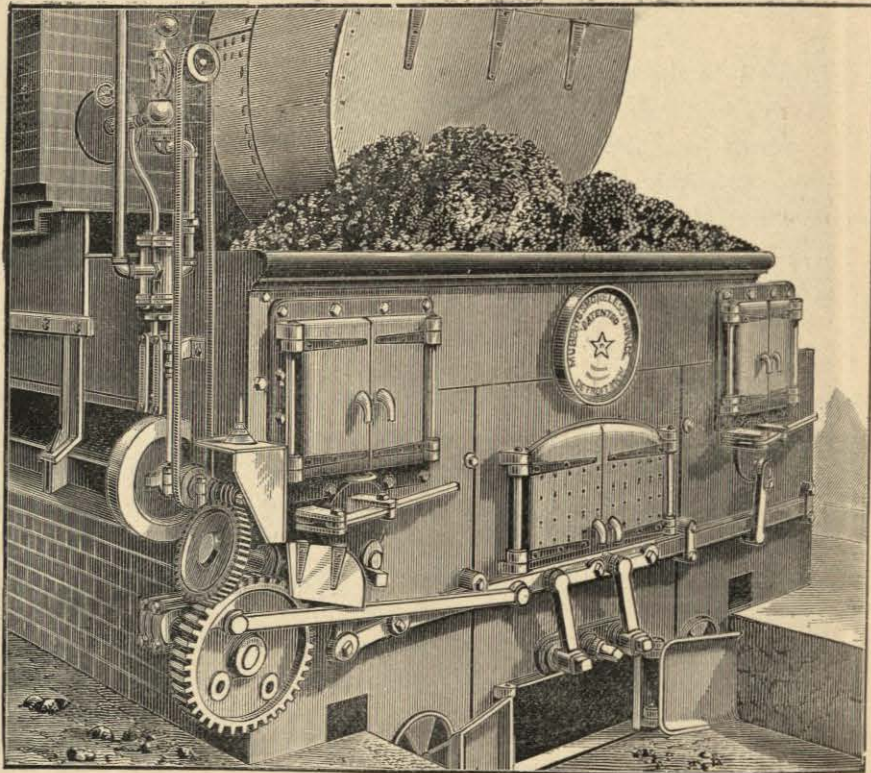
#### THE UTILIZATION OF EXHAUST STEAM

for heating from stations where engines are running to supply large power for electric lighting, for propeling electric lines of railway, or for running cable lines of railway in cities, or in supplying power for large manufacturing enterprises. The rapid installation of many electric lighting and railway plants has greatly stimulated the growth of this branch of the industry during the past two or three years. And very great interest is being manifested by electrical journals and companies that are favorably situated for putting the plan in practice.

Instead of

#### EXHAUSTING ITS STEAM INTO THE ATMOSPHERE,

let us consider what are the inducements for an electrical company to construct lines of pipe for the distribution and sale of its exhaust steam for heating buildings.



Smokeless Furnace, with Automatic Feed, for Burning of Bituminous Coal Slack.



It is well known that only about ten per cent. of the heat in steam, passing through an engine, is converted into

#### MECHANICAL ENERGY,

and that nine-tenths remains available for the heating of dwellings, stores and public buildings. It is calculated from actual practice that 100 H. P. of steam will heat one million cubic feet of space in average buildings, and that a fair commercial rate to charge for such heating is in most localities \$4.00 per thousand cubic feet of space for the heating season.

It will thus be seen that the steam which the station manager throws away after it has passed his engine, is capable of producing a

#### LARGE REVENUE,

in many cases it may be a larger net revenue than he receives from all his other work.

It is well known that some important branches of manufacture depend upon the sale of their by-products for profits with which to pay dividends. Exhaust steam at the electrical station is a by-product. It is an article for which there is a sure and steady demand during eight months of the year. The electric light or railway plant has only to add mains through which to distribute its exhaust in order to become a

#### HEATING PLANT

as well. Now, boilers and men are frequently idle a large portion of the time every day.

#### INTEREST ON INVESTMENT COUNTS

right along, whether the plant is at work or whether it is idle. Add steam heating and the plant earns money day and night. It is only another method of distributing and utilizing the latent energy which was stored up in the coal, and which in the station has been liberated to do man's work. Why should we allow the major part of this energy to be dissipated into the air, instead of applying it to the work which is only waiting to be done? But some stations use

#### CONDENSING ENGINES

and the manager flatters himself that now he is conserving the energy which before was eluding his best efforts, when running non-condens-

ing. And so he is, to a very limited extent. That he over estimates results is probable, as we will attempt to show.

A plain cylinder will use 10 per cent. only of the heat units represented by the fuel consumed. If you add a condenser you can increase the efficiency of your engine 25 to 33 per cent., that is, you then use 13 per cent. instead of 10 per cent. of the heat units. Where is the balance of your heat units? Making due allowance for radiation from your boilers and engines, it may be said for a fact, that at least 80 per cent. of the total heat units flows away in the large stream of hot water leaving the condenser. If the manager can make no better use of his steam, then three per cent. is a saving, provided he has free water without pumping. If the company pays water rent or runs a pump, it is doubtful if there is any economy. If the condenser is advisable he can run it during the part of a season when there is no market for heat; construct a system of street mains to connect with the exhaust pipe, and disconnect the condenser during the heating season.

The condenser does not bring any relief from the hours of idleness each day, when the whole plant is "lying idle and unproductive of anything but interest account."

The case is simply this: Given a certain amount of fuel to be burned under a battery of boilers which produces in steam a certain number of heat units. The best we can do in engine work leaves more than 80 per cent. of these units still in the steam after it has passed the engines, and which flows away in the water which leaves the condenser. We have constructed our system of steam mains for a goodly number of the electrical companies, and several, after a year's experience have made large extensions in order to reach additional customers, who are clamoring for the steam service. These companies carry from 5 to 10 pounds pressure in their heating mains, which necessitates nothing more than an increase of boiler pressure to a like extent, in order to overcome the back pressure upon the engines. The mains when laid are connected with the exhaust pipes of the engines, and in their construction are not materially different from those in a live steam plant.

Originally there were serious obstacles to overcome in the construction of

#### PROTECTED UNDERGROUND PIPES,

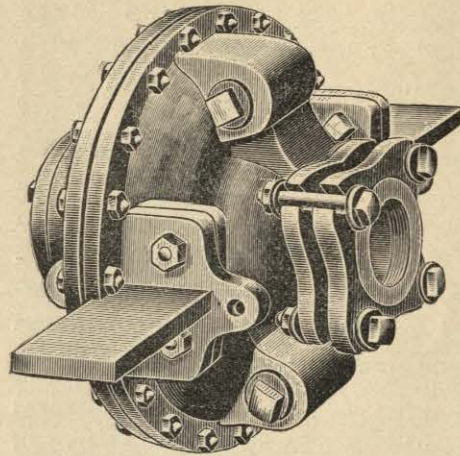
one of which was the buckling and breaking of the iron pipes on account of their expansion and contraction, caused by changes of



temperature. This was accomplished at first by the device which was termed a "junction service box," placed at intervals in the mains.

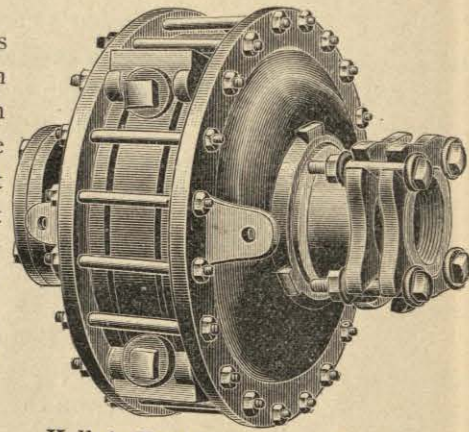
Later the device now in use in the "Holly system" was invented, known as the

"VARIATOR,"



Holly's Single Service Variator.

a sectional view of which is shown. This embodies a corrugated copper diaphragm, with cast-iron backing plates for strength; the yielding and reflex action of which provides for varying lengths in the sections of pipe. No stuffing-box is required, and the device is protected from contact with the earth and covered the same as the pipe itself, no manholes being required.



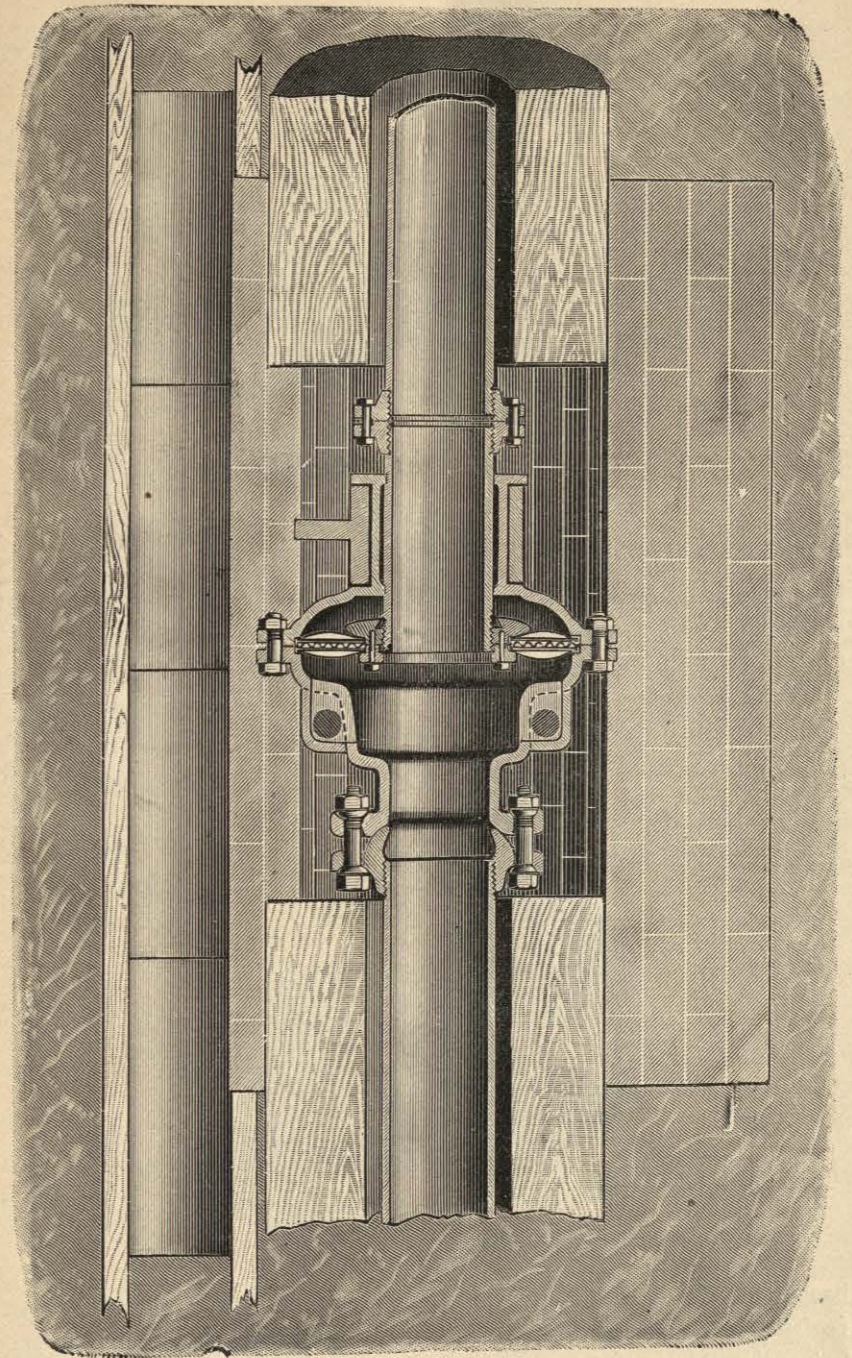
Holly's Double Service Variator.

Another point to consider was the prevention of undue radiation of heat from the pipes, which would be the case if they were laid in contact with the moist earth. Experiment showed that this could be accomplished by the use of pine logs, bored for the purpose with four-inch shell, the outer surface being coated with asphaltum. These are tenoned together, and the iron pipe, which is first covered with asbestos, is inserted therein. Under this pipe is laid a line of tile, with proper outlet to convey away any surplus water in the surrounding earth.

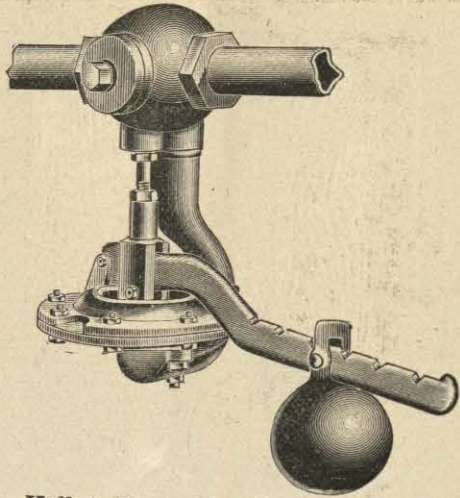
Tests were made showing that with our protection the loss of steam by radiation was not greater than five per cent.

A sectional view denoting the method of construction is also shown.

Sectional View.—Service Variator.



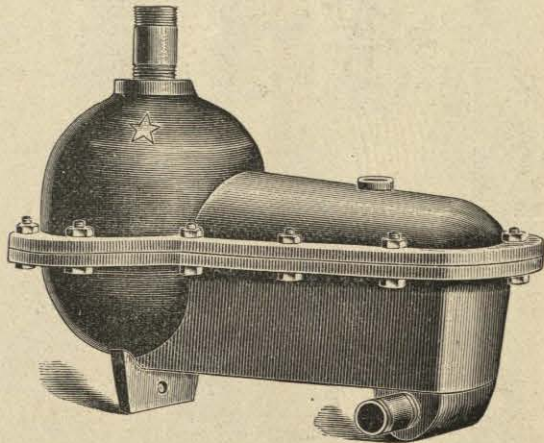




Holly's Steam Regulating Valve.

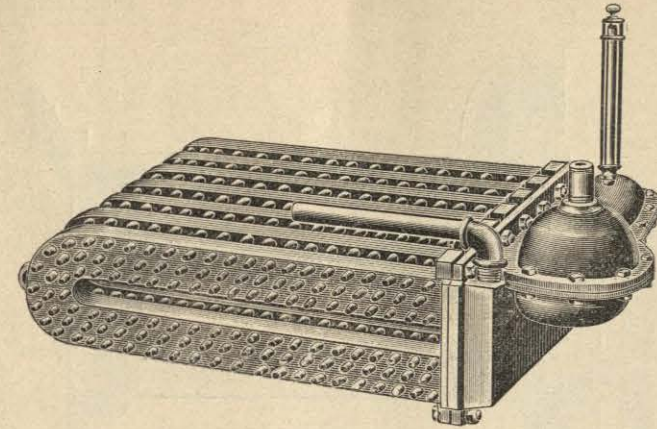
The steam is first conveyed into the basement of the building, passes through the "regulator," which reduces the steam to a low and uniform pressure, and then through the meter, which records the amount in units which is used by each consumer.

The Holly system differs from the ordinary house system, in that it does not return the water of condensation to the boilers. The water goes from the radiators to a trap, and then to a cooling coil in the



Star Steam Trap.

basement, where all the heat is abstracted and passes through a register in the floor above; the water then passes to the sewer, or being chemically pure, may be used for any purpose desired.



Combined Cooling Coil and Trap.

The proper heating and ventilating of

#### COLLEGE AND UNIVERSITY BUILDINGS

is a problem that had not been solved until the recent adoption by several of these institutions of the Holly System of under ground mains, by which the various detached buildings, frequently separated by considerable distances, are all connected with a single boiler station, and a single firemen supplies heat to all the buildings.

The service is found to be infinitely better than by furnaces or individual boilers: a large amount of labor is dispensed with, and the risk of loss and damage by fire is obviated. By using cheaper grades of fuel the expenses are very much reduced.

In one such institution, our system displaced 40 or 50 individual boilers and now about 10,000,000 cubic feet of space is warmed from the central station, and much better heated than ever before.

For economical heating of

#### SUBURBAN HOMES

this plan is especially adapted.

Many business men in the larger cities, and men who have retired from active business to spend the evening of their days, have built elegant residences on the various railroad lines a few miles out from the busy centers of trade. They desire for their families the luxuries and comforts of city life. Nothing contributes more to this than to have their homes contain a summer warmth at all hours of the day or night independent of the care of heedless servants.



In constructing

A STEAM SYSTEM

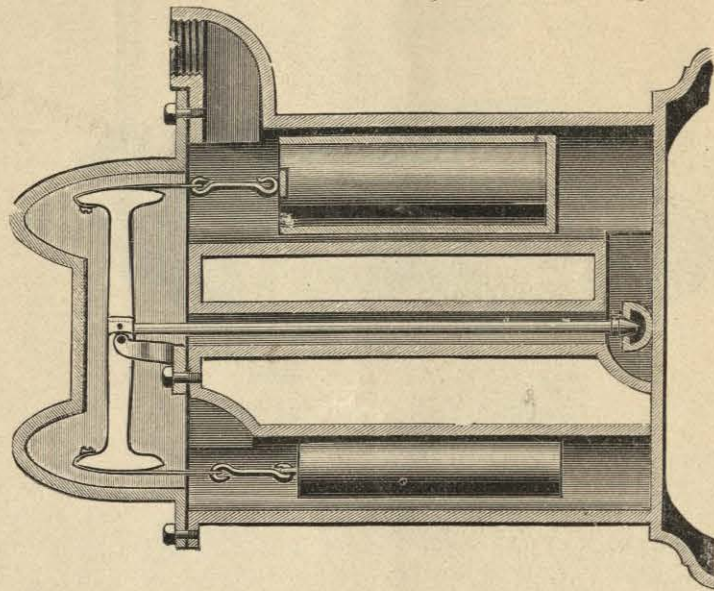
the boiler house should be as central as the circumstances will admit, preferably upon a railroad track for the convenient delivery of coal. The building in size should be proportioned to the amount of anticipated business.

*The main pipe* leading from the Station should be large, as all the steam manufactured must pass through it. From the point at which the pipe branches to supply different streets the size is reduced from time to time and adapted to the work which it will be required to do.

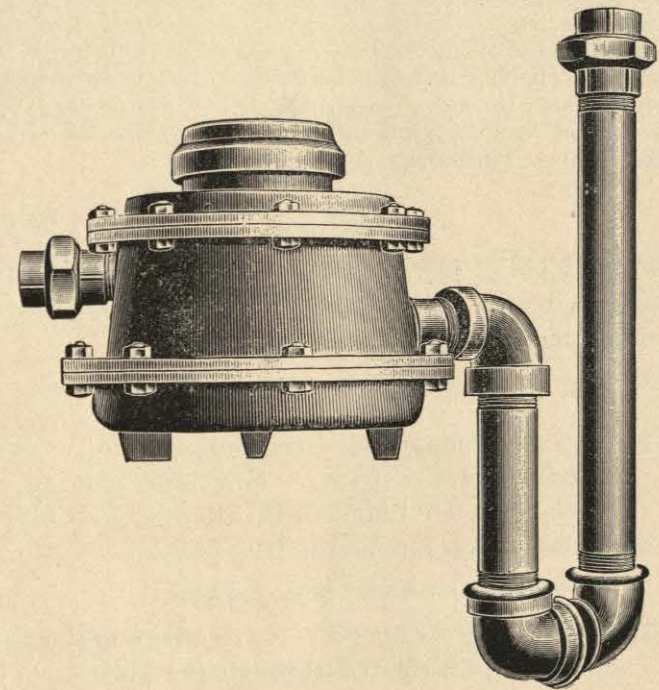
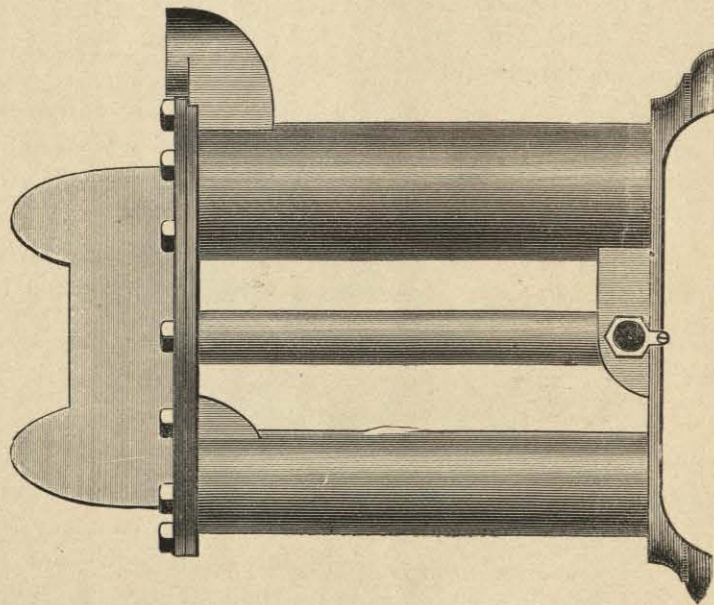
These pipes are of the best lap-welded wrought iron, tested to many times the pressure ever required in actual use, and the service pipes leading to the buildings are of the same material.

THE METER

is an important feature in a steam system, as it at once detects extravagance if any is practiced by the steam consumer. The Holly meter



Holly's Patent Steam Trap.



Holly's Steam Meter.



is demonstrated to be practically correct. Prof. John E. Sweet, of Syracuse, N. Y., made a series of tests to determine this point, and we copy a portion of his report. He says :

"With the assistance of your Superintendent, Mr. Ira A. Holly, I have made a careful examination of your steam meters, as to their construction and the manner in which they measure the quantity of steam which passes through them.

"There was set up in the works of the Heat & Power Company, first, a one and one-half inch meter for measuring the steam delivered. This one and one-half inch meter discharged the steam into a one inch meter under a pressure of 60 pounds to the square inch, and from a one inch meter the steam was delivered to an electric light engine 5x7 inches running 300 revolutions per minute. The meter dials were started at zero. After running eight days the one and one-half inch meter registered 5,363 units as having passed through. Price per 1,000 units, \$3.15 (the rate for a one and one-half inch meter), would be \$16.99. The inch meter had registered 17,250 units, which at 93 cents per 1,000 units (the rate for a one inch meter), would be \$16.90, showing a difference in eight days run of only 9 cents.

"We then reversed the meters, putting the steam through the one inch meter first then through the one and one-half inch meter, thence to the engine under the same conditions.

"After running four days the one inch meter registered 9,000 units delivered, which at 98 cents per 1,000 amounts to \$8.82. The one and one-half inch meter registered 2,798 units, at \$3.15 per 1,000, \$8.81, showing a difference of one cent between the registering of the two meters, also showing that in the aggregate the steam meters, when multiplied by their respective ratios as given in the tables, are practically the same. In other words, the one inch meter has to run nearly three times as fast to do the same work in the same length of time that the one and one-half inch meter does, but the amount of cost to the consumer in dollars and cents would be practically the same, whether running a one inch or one and one-half inch meter to do the same amount of work, and from the care in their construction, I should expect equally accurate results from the 2 inch and 3 inch meters."

Respectfully submitted.

#### RADIATORS.

No particular style of radiator is necessary, and buildings already fitted and supplied with steam from a house boiler can, with little expense, be connected with the street main.

The water for

#### BATH TUBS

can be heated in a few minutes by the application of a jet of steam through a small box filled with gravel. Hot water for any purpose may thus be secured at all times with little delay. Coils of pipes arranged in suitable closets furnish the best possible

#### DRYING ROOM FOR CLOTHES.

Water can be forced by steam pressure to a tank in the attic, either hot or cold, and thence distributed through the building in the usual manner.

#### COOKING BY STEAM

is not new, but steam supply systems, as introduced in cities, are likely to bring this method into common use, and steam ranges are being perfected which will hasten this consummation.

#### GREENHOUSES AND CONSERVATORIES

may be heated directly with steam, or by the hot water of condensation.

#### STEAM FIRE ENGINES

may dispense with furnaces and boilers altogether, by attaching hose to street steam hydrants; more than this, every building may have a steam fire apparatus of its own, on its own premises, by simply having a stand-pipe within, connecting with the street mains, so that any floor in the building can, in a few minutes after a fire is discovered, be flooded with steam, and the fire instantly extinguished.

A small boiler on the premises would not supply steam enough to do any good. But the District System, with its immense batteries of boilers and large reservoirs of steam, held by the mains at high pressure, furnishes an adequate supply. This supply is always on hand, night or day, week-day or Sunday. It can readily be seen that the effect will be to materially reduce the

#### COST OF FIRE RISKS

within the limits of the steam supply.

To sum up briefly, some of the advantages of district steam are :

*Steam for Heat and Power*, always on tap night or day like gas or water.

*Lower Insurance Rates*, because of the absence of fires on the premises, and the certain means at hand for extinguishing incipient fires.

*No Smoke from Central Stations*; saving a great loss to stocks of goods in stores from soot, and dust from registers and stoves.

*Saving of Space*, usually occupied by boilers and coal piles.

*Saving of Labor*, in tending fires and removing ashes.

*Steam for Power*, for running elevators and light machinery, thus utilizing all upper floors for manufacturing purposes.

*Buildings with Steam* will simply disconnect from boilers and connect with street system.



*Buildings without Steam* can be fitted up for much less than with individual boilers.

*Health is Promoted* wherever a Florida temperature is introduced in our houses and obnoxious gases are banished.

*Real Estate is Enhanced in Value* on any street in which a steam pipe is laid, because more rentable on account of this added improvement.

As a business venture, it may be asked what are the conditions which will secure the investor a reasonable

#### MARGIN OF PROFIT ?

First.—It is well known that there is a great advantage in making steam in large batteries of boilers, which easily evaporate 8 to 10 pounds of water from one pound of coal, while four to five pounds is the usual evaporation in house boilers. At the same time the householder must suffer wear and tear on his individual boiler, and will gladly pay more than his fuel bills to be rid of this expense, and the care and labor connected with his apparatus, and the additional advantage of steam always being on tap.

Second.—While the individual apparatus must use the most costly grades of anthracite coal,

#### LARGE BATTERIES OF BOILERS

will consume the various grades of bituminous coal, with which nearly all sections of the country are supplied, and even the slack or refuse of the mines is brought into use, and will, ton for ton, in properly constructed furnaces, produce as much steam as the more expensive grades.

We have a dozen or more successful companies in operation right in the anthracite region where the best stove coal is supplied to houses at \$2.50 per ton. They are popular and successful because of the better quality of heat supplied, and because the companies use the cheapest grades of coal from the mines. Another thing, this cheap coal can be burned in

#### SMOKELESS FURNACES.

One of the greatest evils to be overcome, and which is causing much trouble and anxiety in many of our cities, is the

#### CLOUDS OF SMOKE AND SOOT

pouring from hundreds of chimneys. The authorities are endeavoring to

#### ABATE THIS NUISANCE

and to protect tradesmen from the damage which ensues to large and costly stocks of goods and fabrics. A Steam Company with its smokeless apparatus can supply steam to all within the radius of its lines and the atmosphere can be cleared from this nuisance.

In the west and northwest where bituminous coals are plentiful and cheap, this fuel can in cities be made thus to take the place of anthracite for house use, which is dear on account of long distance transportation.

It seems to be the policy of the

#### ANTHRACITE COAL COMBINATION

to crowd up prices, and maintain them at higher rates than ever before. The only way to escape their demand is, in cities and villages where soft coal is plentiful and cheap, to organize steam heating companies that can utilize the cheaper grades of fuel, but which are not available for use in the individual apparatus.

#### PATENTS.

At the inception of this enterprise several patents were obtained by Mr. Birdsill Holly, who was also the inventor of the system of direct pumping for water supply in cities, so many of which are now in use. The patents thus obtained, relating to a system of steam supply, are comprehensive and cover all essential points. These, and others, are all owned by this company. Our charges are moderate for their use, not believing it wise to hamper the business by exorbitant demands in the way of royalty.

When

#### COMPANIES ARE FORMED

we prefer to have them construct their own boiler station complete, but stand ready to give such advice and information as may be desired. But experience has shown that it is not for the company's interest to construct for themselves the street mains for the initial plant. We therefore contract for this work and turn it over to the company fully guaranteed.

The house devices, such as Meters, Traps and Regulators, we also supply, as it would not be expedient for each company to undertake this branch of manufacture for itself. Our pamphlet and illustrated catalogue of devices will be mailed on application.



We invite

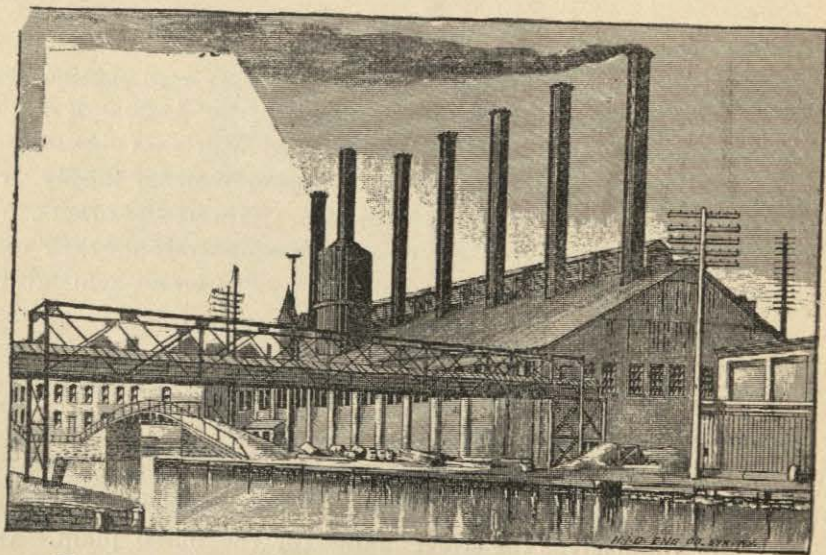
CORRESPONDENCE,

and will make surveys, maps and plans when desired, and furnish estimates for work to be done by us.

Address all letters,

AMERICAN DISTRICT STEAM CO.,

LOCKPORT, N. Y.



Steam Heating and Power Station, Showing 12-inch Main Therefrom on Bridge Crossing Water Course Before Entering the Ground.

We publish a few

TESTIMONIALS FROM INDIVIDUAL CONSUMERS,

who are patrons of the Holly System of Steam Heating in different localities :

*Gentlemen* :—I have been using your service pipes for the supply of steam to my house for the past two seasons with entire satisfaction, and gladly attest its merits. Can recommend it to the public.  
Respectfully,  
H. O. ARMOUR.

*Gentlemen* :—Last summer I put in the service pipes of *The New York Steam Company*, and had my heating apparatus so arranged and controlled by the introduction of the thermostat that human interference ceased, and under all conditions of the weather this winter, my house has been most delightfully warmed. The bills monthly for the service were entirely satisfactory, and it affords me pleasure to send you this.  
Respectfully,  
SIDNEY DILLON.

*Gentlemen* :—I have used the steam service supplied by your street mains for two seasons, and do not hesitate to say that the even and abundant supply at all times enables me to obtain much more satisfaction in providing heat for my residence than I ever had before.  
Yours truly,  
WM. ROCKEFELLER.

*Gentlemen* :—The steam service furnished by your Company is certainly one of the important improvements of the age. Experience enables me to give it the highest praise and unqualified commendation.  
Very truly yours,  
GEORGE S. SCOTT.

*Gentlemen* :—I take great pleasure in commending the steam service of your Company to the public. We have used it for two winters and find it a great comfort. The uniform temperature obtained must be largely beneficial to health.  
Yours truly,  
WILLIAM BELDEN.

*Gentlemen* :—The supply of steam furnished by your Company has kept my house much more comfortable than I could have it by the use of my own boiler. After trying it two seasons, I recommend your service.  
Respectfully,  
C. A. POSTLEY.

*Gentlemen* :—Those who order the steam service put in will be glad they have done so, and those who don't will be sorry when they learn what "perfect comfort" their neighbors have secured. These are the sentiments of your consumer.  
SOLOMON TURCK.

*Gentlemen* :—We are very much pleased with the steam service supplied by your Company. We think we have got a corner on the cold weather that used to invade our house. We get Florida temperature when zero weather is full grown outside. It is very satisfactory.  
Respectfully yours,  
D. S. RITTERBAND, President.

*Gentlemen* :—I am much pleased with the steam service. It is a convenience that will become indispensable to housekeepers, steam is so much preferable to the old style of furnace.  
Very truly yours,  
MRS. A. MORRILL.

*Gentlemen* :—After my winter's experience with your steam service I would not willingly be without it, and hardly know how to say enough in its favor.  
Sincerely yours,  
HARRIET A. WALTER.

*Gentlemen* :—I have had the steam service as supplied by your Company for heating my house for the past two winters. It is a very great improvement on running one's own boiler, and has worked to my entire satisfaction.  
Yours truly,  
J. ROTHSCHILD.

*Gentlemen* :—Have had the steam service all winter and cheerfully indorse it as being the most thorough way of heating. I regard it as worth all it costs over the hot-air system of furnaces.  
Yours truly,  
WM. HOYT.



*Gentlemen*:—I can safely recommend the steam service as supplied by your Company in preference to other tried methods of heating one's home. I am so greatly pleased that I discontinued the use of my boiler, and connected with your steam service.  
Respectfully,  
HENRY SAMPSON.

*Gentlemen*:—We are all very much pleased with the steam heat, and find that we can thoroughly warm our house, even in the coldest weather.  
Yours very truly,  
W. JENNINGS DEMOREST.

*Gentlemen*:—The steam service supplied by your Company, and introduced into my house last fall, has been highly satisfactory. The house has been much more comfortable than it ever was with the furnaces, and I am pleased at having made the change.  
Very truly,  
GEORGE STORM.

*Gentlemen*:—The service is all I had hoped for. I have not the slightest reason to say a word against it. On the contrary, I shall not be slow to inform my neighbors that it is the most perfect method of heating a house extant.  
Respectfully yours,  
A. D. BREED.

*Gentlemen*:—I cannot speak in too high praise of your steam service. I would not be without it, and I feel confident if people generally knew of its merits as I do they would all want it.  
Respectfully,  
V. HENRY ROTHSCHILD.

*Gentlemen*:—I have now been supplied by your Company with steam from the street mains to my house, No. 800 Fifth Avenue, for two winters, during which time it has given me entire satisfaction, and the supply has been continuous without a break.

My experience during the past winter has been that your bills for steam have been less than I would have been obliged to pay for coal if I had run my own boilers. A constant supply of heat, night and day, we find a very great convenience, especially in case of sickness, as we are enabled to keep the temperature satisfactory at all hours. To be relieved from the dirt, dust and other annoyances on account of handling coal and ashes in and out is a very great comfort, which none can appreciate until they have tried it.  
Yours truly,  
J. A. BOSTWICK.

*Gentlemen*:—I have been using the steam supplied by your station for the past two winters, and permit me to say that I regard it highly beneficial to the comfort and healthfulness of the home.  
Very truly yours,  
WILSON PETERSON, M. D.

*Gentlemen*:—By your system of supplying steam I have had my house heated for the past two winters. I am pleased with it. I never had my house warmed so comfortably before. Your patronage should increase amazingly, once the people get to understand its superiority.  
Respectfully yours,  
E. FRANK COE.

*Gentlemen*:—I have been a consumer of steam supplied by your service pipes for the past two seasons, and have had a great satisfaction as compared with the supply made by the use of a boiler on the premises. I much prefer that furnished by your Company, and hope you will receive liberal patronage from the property owners on your line.  
Yours truly,  
FREDERICK GALLATIN.

*Gentlemen*:—I take pleasure in testifying to the efficacy, comfort and healthfulness of your method of heating dwellings by steam, which I have employed during the past winter. It has given me so much satisfaction, that I would return to the old plan of heating by furnace with great regret.  
Yours respectfully,  
T. GAILLARD THOMAS, M. D.

*Gentlemen*:—In answer to your inquiry, I am happy to say that I have found the steam heat all that I expected. It heats my house in the coldest weather; it is equally manageable and desirable in the moderate and very mild weather. The quality of heat is admirable. With a little attention, it is easily controlled and regulated. I regard it as one of the greatest luxuries afforded by modern invention, and, I am sure, when known it will be generally used. When you make the cost not to exceed that of a furnace, it will leave little to be desired.  
Yours truly,  
WHEELER H. PECKHAM.

*Gentlemen*:—The steam supplied by your Company has been in use the past winter in the Church of the Holy Spirit and also in the rectory. The supply has been regular, and the comfort of all interested greatly enhanced. We would not go back to the old and imperfect method of heating for thrice the amount the steam costs.  
Very truly yours,  
REV. DR. EDMUND GUILBERT,  
Rector Church of the Holy Spirit.

*Gentlemen*:—Have used your steam heat for two years. I cannot write you how much I value it, for its uniformity of heat, its comfort and cleanliness to both furniture and paintings. I have never enjoyed so much comfort for so little expense.  
Yours truly,  
C. LAMBERT.

*Gentlemen*:—I have used your steam service supplied by your Company during the past winter in my house, No. 685 Fifth Avenue, and take pleasure in saying that the service has been entirely satisfactory.  
Truly yours,  
H. M. FLAGLER.

*Sir*:—In answer to your letter asking a few questions about the Holly Steam System, we would say that we have been using it since it was introduced in this city, and it has never failed to do our work. We do all our cooking by steam. We have found the supply sufficient and reliable at all times. As to the difference in cost between this system and the old way, we cannot inform you, as we have never used steam from a boiler of our own.

Before using the steam furnished by this system we got our supply from the boilers of the *N. Y. Times*. Our experience with this system has been entirely satisfactory. Your letter was mislaid in some unaccountable way, therefore you will please excuse the delay in answering.  
Yours truly,  
NASH & CROOK.

NOTE.—These gentlemen are the proprietors of the well-known restaurant in Park Row, New York City, serving 8,000 meals daily.

*Dear Sir*:—In regard to the use of steam by me, as furnished by the New York Steam Co., I would say they have always furnished an abundance of it night and day at a pressure of 80 lbs.; this pressure I use for driving machinery and throttle it down to 30 or 40 lbs. for cooking. Steam is a great necessity for power, light and heat, and will eventually be used and furnished from the street the same as gas or water.

The longer I use it the better I think of it.  
Success must attend good management in making steam for cities, the same as gas, water or street railways.  
Yours respectfully,  
SMITH & McNELL.

NOTE.—This firm, corner of Fulton and Washington streets, New York City, supply on an average 10,000 meals daily.

*From Gen'l James A. Beaver, former Governor of Pennsylvania:*

Your letter of the 17th inst., has been received. We have had the Holly System of Steam Heating in successful operation in Bellefonte for two years. It has given undoubted and universal satisfaction. It has been a success in every way.

The patrons of the Company are well satisfied and the system is being extended every year. It costs us less than heating in the ordinary way, heats one's house much more satisfactorily, is much more cleanly and more desirable in every way.  
Very truly yours,  
JAMES A. BEAVER.

Having requested my views on the use of steam heat in my residence as furnished by the Harrisburg Steam Heating Company, I cheerfully give them in brief. I may premise by stating that fully believing steam heat to be the heat of the future, and in order not to have responsibility divided in the success of its introduction, I had the work done at my residence by the Heating Company.

As to freedom from gas, dust, and other vexatious annoyances of coal burning, I cannot speak too highly. The steam heat has proved a charm. Its absolute safety also relieves the minds of the household, for there was no wandering over the house at bedtime to ascertain if "all was safe." They can "lie down to pleasant dreams," feeling that, so far as their own house is concerned, there are no fears of fire.



As to its excellent SANITARY effect upon our dwellings there can be no doubt. No coal gas! No dust! The steam heat requires regulating, however, but this is easily learned and done, for not only on this is depending the comfort of our homes, but economy in the use of steam heat.

To sum up, permit me to say that I could not be better pleased than I am with the entire workings of the steam heat during the past winter.

Yours with respect  
WILLIAM H. EGGLE, M. D.

We heated our storeroom last winter with steam supplied by the Harrisburg Steam Heat and Power Company, and can heartily recommend it, both for convenience and efficiency.

FOURNEY & KNOUSE.

The store rooms, Nos. 334 and 336 Marker street, occupied by Dives, Pomeroy & Stewart, dry goods, are heated with steam supplied by the Harrisburg Steam Heat and Power Company. It affords us great pleasure to say that the heat has been highly satisfactory, and can substantiate all the advantages claimed by the Company as far as our experience goes. By reason of the uniform pressure through the street mains, we were enabled to maintain an even temperature at all times, even during the several severe cold spells of the season, and were often complimented by the ladies as having the most comfortable shopping quarters in Harrisburg. We would not like to do without it.

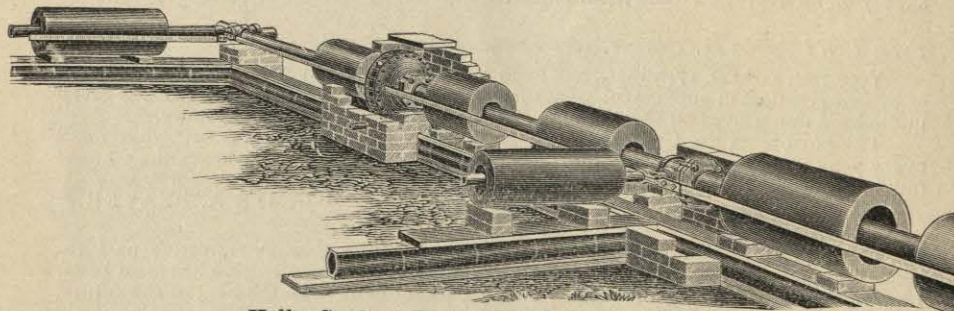
WM. H. BENNETHUM, Manager,  
Dives, Pomeroy & Stewart.

During the past winter College Block has been heated from your plant and has given entire satisfaction, not only to myself, but to the numerous tenants throughout the building. It has given satisfaction not only as to cost, but in regular, uniform heat. It avoids the dirt from coal and ashes and necessitates the cleaning of rooms less frequently, which makes it more valuable in stores and offices. The danger from fire is decreased to a minimum, which is a fact that the Fire Insurance Companies should not fail to recognize.

S. W. FLEMING.

I desire to say to you that the apparatus and the steam service furnished to me in storeroom and entire building has been so much superior to what we have had in the use of furnaces and stoves that I can without hesitation pronounce it perfect. The entire absence of dirt and dust makes this manner of heating very desirable, especially in storerooms. The cost has been low, very little if any more than cost of coal, removing of ashes and attention to furnace, not to speak of the convenience of having heat at any and all times. I assure you I would not be without it if the cost were double what it has been. It has given me perfect satisfaction.

HARRY C. ROSS, 21 North Third Street.



Holly System Underground Steam Mains.



