

Vapor—
Vacuum
Heating
Kriebel
System





Vapor-Vacuum Heating Co.
Drexel Building Philadelphia, Pa.

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Vapor-Vacuum Heating Co.
Philadelphia, Pa.

Preface

YOU would say that the cost of heating a house depends on how cold the weather is, how big the house, and to some extent on how good the heating system—which is a good guess on the whole—as far as it goes.

In addition to “how good the heating system,” however, the cost of heating depends chiefly on the kind of system.

Now a steam system may be a perfect system of its kind—and yet it takes a lot of coal to keep up constant pressure. The same is true of a perfect hot-water system; it eats up the coal keeping the large volume of water circulating.

The point is that with either of these systems, both perfect of their kind, you have more heat than you want a large proportion of the time—or none at all.

The following is the simple, direct story of the advantages of the Kriebel System of Vapor-Vacuum Heating as compared with steam or hot-water heating.

The operation of the Vapor-Vacuum System is so simple, and yet the results accomplished are so important, that no one who is confronted with the problem of “which heating system?” should fail to read every word of this Vapor-Vacuum story.

The Principle of Vapor-Vacuum Heating, Kriebel System

ATMOSPHERE is said to be about forty miles high. At any rate it exerts a pressure on the earth at sea level of 14.7 pounds to the square inch. This pressure *on* the earth of course also means, *on* or *about* or *in everything* on the earth. And while air is the cheapest element we have on earth, it is a very expensive obstacle when it holds its place on the inside of a heating system.

Under this pressure of nearly fifteen pounds to the square inch water boils at 212 degrees Fahrenheit. Remove this atmospheric pressure—produce a perfect vacuum—and water will boil at ninety-eight degrees.

Although science has proven that it is impossible to produce an *absolute* vacuum, it is readily seen that the lower the temperature at which water will boil, the less fuel is required to heat it—and that the way to secure the lowest possible boiling point is to remove the atmospheric pressure—create a *partial* vacuum within the system. This is the plan upon which the Vapor-Vacuum System operates. It is as simple as an ordinary suction syringe.

When you stick the nozzle of a syringe into water and draw up the piston or plunger, the water is drawn up into the syringe. That's suction. Which simply means lifting off the air pressure *within* the syringe, so that the air pressure on the surface of the water *without* will force the water up into the syringe.

Thus the *first* result of the vacuum within the system is to reduce the work that the fire has to do, which cuts down the consumption of fuel.

Comparison with Steam Heating

We won't take it for granted that you know all about a regular steam-heating system, but will talk as if you didn't.

Steam cannot get into the piping or radiators of the ordinary steam system until the air gets out. And it takes some time to get it out, because you first have to drive it through the *pin* holes in the automatic air valves. And then you have to *keep* it out—with nearly fifteen pounds to the square inch of atmospheric pressure on the outside trying to drive it back in. And if you let your fire quiet down enough so that steam pressure ceases, the air with its preponderating pressure immediately forces its way in again. Then you have to fire up, and the

spasmodic sputtering, hissing and water-spitting operation of the air valve is repeated.

With the **Kriebel System of Vapor-Vacuum Heating** this is entirely overcome. The Air Valves are all done away with. The air is disposed of through the same pipe that carries off the water of condensation from the vapor. The escape of the air occurs altogether in the cellar, and is prevented from returning to the system by the action of the automatic Vapor-Vacuum controller. In the ordinary steam plant, every time fresh coal is put on the fire the steam goes down and air is drawn into every part of the system, including the radiators, boiler and piping. This has all to be forced out before the radiators are again warm. With the Vapor-Vacuum System the vapor stands ready at all times at the radiator, to enter when the inlet valve is opened, and there is no whistling of valves at any time. The system is absolutely noiseless.

Comparison with Hot-Water Heating

The Vapor-Vacuum System has all of the advantages and none of the disadvantages of hot-water heating. In the first place, hot-water radiators are sixty-five per cent. larger than Vapor-Vacuum radiators. This frequently means, on account of their

size, that in large rooms two hot-water radiators must be placed, that is, the radiation must be divided, instead of installing one gigantic hot-water radiator; while with the Vapor-Vacuum System *one* radiator would be adequate. This means less expense also in installation.

Vapor-Vacuum radiators can be closed off instantly and the heat stopped. On hot-water radiators the valve can be turned, but that is about all it amounts to—because the radiator is still full of hot water and you do not get an appreciable change in the temperature of the room until the water cools down. Then, too, there is a small hole bored through the cylinder disc of all hot-water valves to prevent the radiator from freezing and bursting if the fire should get too low. This hole means that you have *some* hot water circulating through the radiator whether the valve is supposed to be closed or open. You can never turn the radiator absolutely off. In mild weather this is a decided objection to hot-water heat.

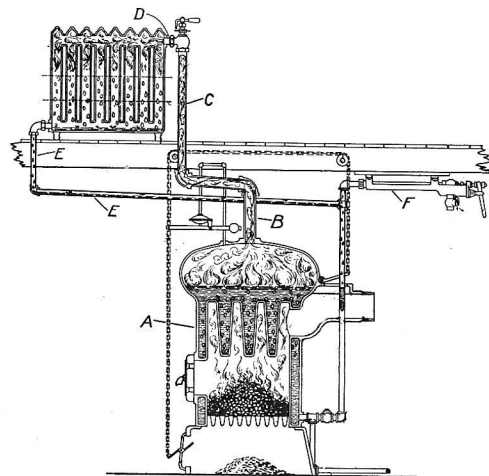
You need never have any fear of Vapor-Vacuum radiators freezing, no matter how cold the weather is, because there is nothing in them to freeze. Nor need you hesitate to have Vapor-Vacuum riser lines of pipes concealed in your walls. They are only

about a quarter the size of the hot-water pipes, and they are not full of water *all* of the time, nor at *any* time. In fact, most of the water in a Vapor-Vacuum System is down in the boiler, and only a few gallons at that, while a hot-water system that would be required to heat an ordinary ten or twelve room house would contain over *one thousand gallons* of water to be constantly kept up in temperature and in motion through the boiler, piping and radiators.

There is no troublesome expansion tank to overflow and take out the water in a Vapor-Vacuum System as in the hot-water job, and consequently little water to put into the former. In fact, so small a quantity in some instances that no water whatever—not a single drop—is required in a whole season. There is a testimonial to that effect in the back of this booklet, the writer of which goes even further and says that from the appearance of the water in the gauge glass on the boiler, he will not have to put any in during next winter.

How the Kriebel System of Vapor-Vacuum Heating Operates

If you will follow this description closely, referring to the diagram by the letters A, B, etc., as reference is made to them, you will readily understand the simple and *natural* operation of the Vapor-Vacuum System.



The illustration used here is a simplified system consisting of the boiler, *one* radiator with the supply and return pipes leading to and from it—and the controller. We use this simplified system here, in order that the operation may be absolutely clear to the reader. A complete system is shown in back of book.

Shortly after the fire has been started in the boiler (A) and when the thin bodies of water, enveloped by the products of combustion, begin to absorb heat, the vapor commences to rise from the water and suspend in the space at the top of the boiler above the water line. (See cut.) It then quickly makes its way into the main supply pipe (B), to which is connected the branch pipe (C) to the radiator. As the vapor enters the piping, which has until now been filled with air, the air is rapidly forced ahead of the vapor which makes its way to the radiator. Entering through the Inlet (D), the vapor speedily dislodges the air from the radiator through the return air pipe (E), and on through the return main to the Controller (F), where it is ejected from the system—the Controller performing the function of air valve for the entire system. The vapor forcing the air from the system naturally follows the same course to the Controller, but is prevented from escaping *through* the Controller by the instant action of the heat on the brass expansion tube. This action closes the system.

The system is now *filled* with vapor—and the vapor takes its place as a heating agent, transmitting the heat from the radiator to the air in the room. As heat is transmitted to the room, the vapor con-

denses, creating the vacuum and exerting a constant suction on the boiler, pulling the heat up into the radiators.

All this is accomplished without creating pressure at the boiler, and as soon as the drafts are closed and the rate of combustion lowered, vacuum is created.

The advantage of the Vapor-Vacuum System from this standpoint of fuel economy alone—the fact that we are able to guarantee a saving of twenty-five per cent. on fuel, and that in most instances where the Vapor-Vacuum System has been installed the saving has been nearer forty per cent.—should be sufficient to give it the preference over any other heating system.

But this fuel economy factor is only about one-third of the story.

Now let's take a look at the radiator and its Inlet Valve:

The Inlet Valve, you will notice is at the top of the radiator instead of at the bottom. This does away with stooping almost to the floor as in operating the old-style valve.

This Vapor-Vacuum Inlet Valve is made of genuine steam bronze metal, nickel-plated. It is of the rotary cylinder type, "quick opening"—has a neat lever handle, and with a single motion of the wrist (an easy motion, at that) can be thrown from the minimum to the maximum supply of

heat or the reverse if desired. Compare this with the old-style valve near the floor and the many turns—while you stoop—to open or close it. And perhaps you recall the warning from your heating man, "You must keep the valve either shut tight or wide open," or water would be held in the radiator and cause hammering. How often you have wished, especially in moderate weather when you needed only a small quantity of heat, that you might open the

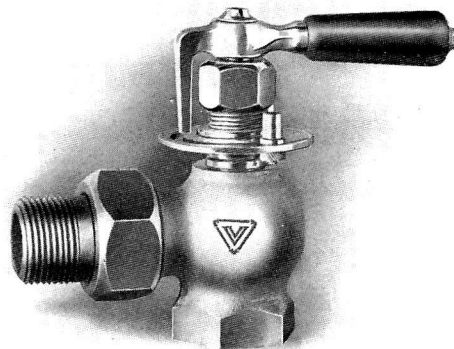
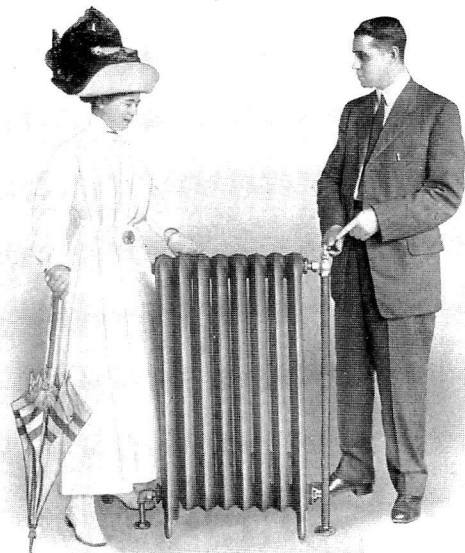


Figure 1

valve just a little instead of heating up the entire radiator. Right here is where the Vapor-Vacuum Inlet Valve demonstrates its real value. Figure 1 shows the finished exterior of the valve, which contains a rotary cylinder with a graduated port or opening through which the vapor passes into the radiator.

These valves are manufactured with different sized ports and by employing a system of numbering, the right size of valve to use with each radiator is indicated, the numbers on the valve corresponding with those on the plans. A number one valve is

VAPOR-VACUUM HEATING, KRIEBEL SYSTEM

used for small radiators when a limited quantity of vapor is required; a number two valve for those radiators ranking next in capacity, etc.

Figure 2 shows cut of valve with part of the body cut away, showing the cylinder and the port opening in the same. The stem, to which the lever handle joins, turns the cylinder and when the larger end of the aperture is set opposite the opening into the

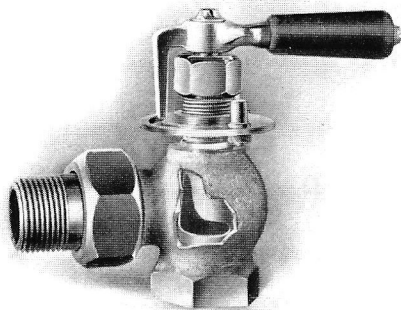


Figure 2

radiator, the entire radiator is heated, while the smaller end of the port permits just enough vapor to enter the radiator to heat only about one-third of its surface.

Figure 3 illustrates this splendid method of providing leeway in heat regulation—this “*as much or as little*” idea, against the

VAPOR-VACUUM HEATING, KRIEBEL SYSTEM

old method—“*too much or too little.*” Its value as a convenience is almost incalculable. It means that you can regulate the amount of heat exactly to weather requirements, and to the temperature desired in each room to be heated.

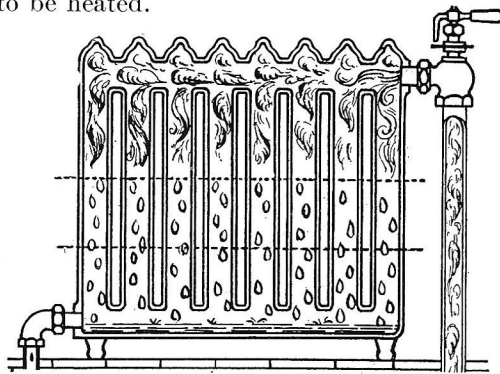
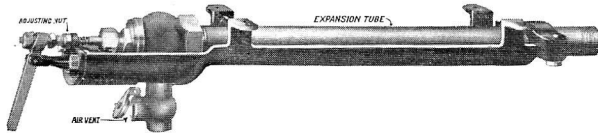


Figure 3

The Radiator: Its Kind and Size

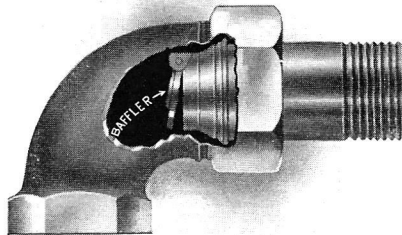
On all new *Vapor-Vacuum work the radiator should be of the hot-water type, having communicating ports between the sections at the top as well as the bottom. This enables the vapor to enter at the top at one end of the radiator when it immediately travels across to the other and settles down as shown in Figure 3, the quantity of radiating surface affected being proportionate with the amount of vapor admitted.

*Special reference is made on page 19 to the question of applying the Vapor-Vacuum System to heating apparatus already installed.



The Vapor-Vacuum Controller

This is the basic feature of the Vapor-Vacuum idea. It is located above the boiler in the basement as was shown in the diagram cut. It is here that the air is expelled from the system; it is here that the vapor is prevented from escaping, by the expanding action of the brass tube; and it is here that



the air which has been forced *from* the system is prevented from returning by the action of the automatic Vapor-Vacuum Controller.

The Union Elbow with Baffle

This cut shows the Union Elbow with Baffle, which connects the radiator with the Return Air Pipe, allowing the air and

condensation to pass from the radiators freely and at the same time preventing the possibility of heat working up through the returns when the supply valves on the radiators are closed.

To Sum Up

The Kriebel System of Vapor-Vacuum Heating offers you every advantage that any other system *can* offer, many *important* advantages that *no* other systems can offer—and *none* of the disadvantages that you have to put up with in any other heating system.

Exactly the amount of heat you want *when* you want it.

Exactly the amount of heat desired in *each* individual radiator.

Even temperature, like the hot-water system—but a much greater *range* of temperature.

Full steam pressure when extreme cold weather requires it.

No heat when heat is not desired—you can turn the heat *clear* off in any radiator, and you don't have to wait for the air to get out of the system before you get heat when you turn it on again.

A guaranteed twenty-five per cent. saving of fuel. Doesn't that answer the question of "which heating system" for you?

VAPOR-VACUUM HEATING CO.
Drexel Building, Philadelphia, Pa.

Cost

For residences, the cost of Vapor-Vacuum Heating is about equal to that of hot-water. For business buildings, factories, etc., the cost is proportionally less.

We will gladly furnish estimates on request. In requesting an estimate, plan of building to be heated should be sent us, together with information as to requirements, preferences as to location of radiators, etc.

Upon adoption of our system, we prepare (free of charge), detailed working drawing and specification, which can be followed easily by any steam-fitter. We guarantee the successful operation of our plants, provided our plans and instructions have been carried out, and the chimneys to which boilers are connected are capable of furnishing adequate draft.

Under no circumstances will we undertake the installation of work ourselves.

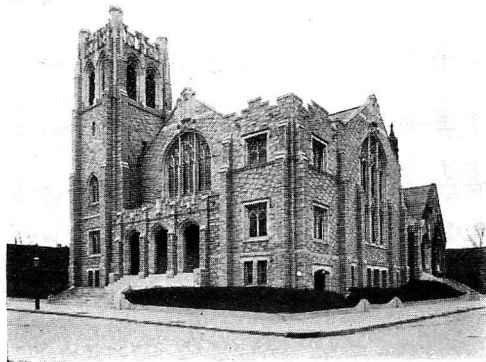
The design and construction of the boilers and radiators used in connection with the Vapor-Vacuum System must be approved by the Company's engineers. Boiler must be equipped with automatic damper regulator and compound gauge. Although the radiator is of the hot-water

type its size when used with the Vapor-Vacuum System is only the same for a given room as the regular steam radiator. This very desirable feature is made possible by the main controller of the system (referred to on another page), which is so designed that regular steam pressure may be raised in the system at any time in the coldest days of winter. It therefore is not necessary with the Vapor-Vacuum System to have radiators in size equal to hot-water radiators nor any larger than the usual steam radiators.

Steam Plants Remodelled

The Vapor-Vacuum System can be applied with the most satisfactory results to steam-heating apparatus already installed. A few minor changes may be necessary to prepare the old system for the Vapor-Vacuum equipment, but when this is done and the new idea applied, the fuel saving immediately begins and the graduated heat supply and other benefits are gained. In such cases a personal investigation and suggestions from one of our experts would be advisable, in order that a correct understanding of the present plant be had and an accurate layout made of the changes required.

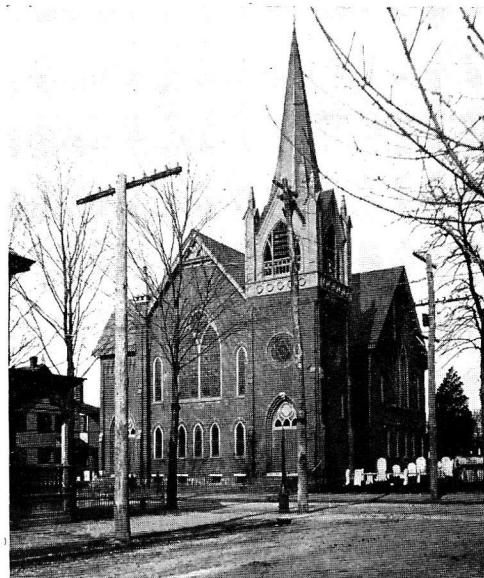
Following are Illustrations of a few buildings,
including Churches, Banks, Dwellings etc.,
in which Vapor-Vacuum Heating,
Kriebel System, is installed:



Fletcher M. E. Church, Philadelphia, Pa.
Wesley Leshner Blithe, Architect, Philadelphia, Pa.



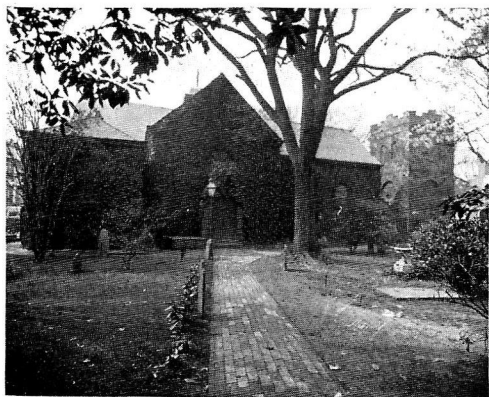
William Barth, Cynwyd, Pa.
Valentine B. Lee, Edwin H. Fetterolf, Associated
Architects, Philadelphia, Pa.



First M. E. Church, Salem, N. J.



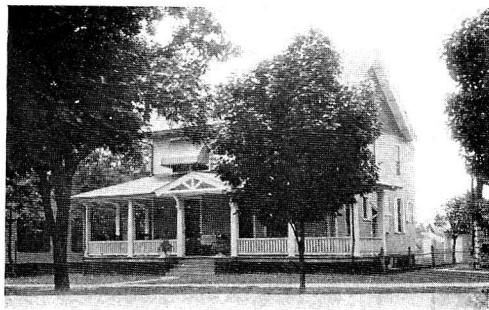
Henry Linde, Oak Lane, Pa.
Valentine B. Lee, Edwin H. Fetterolf, Associated
Architects, Philadelphia, Pa.



Old St. Paul's Church, Norfolk, Va., on Church Street, was built in 1739; it was formerly called "Old Church," but was given the name of St. Paul in 1832. It is situated in an old cemetery, having many very old tombstones, and is to-day the only authentic building in Norfolk that antedates the Revolution by 50 years. Its picturesque, vine-clad walls were all that was left after Lord Dunmore's bombardment of the city in 1776.



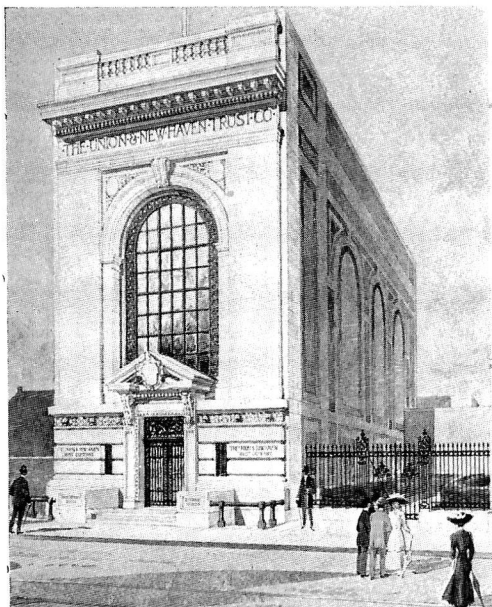
William Ralston, Royersford, Pa.
J. Vincent Poley, Architect, Royersford, Pa.



I. R. Lyme, Harrisburg, Pa.



H. Leh and Company, Allentown, Pa.
Ephraim M. Pickins, Architect, Allentown, Pa.



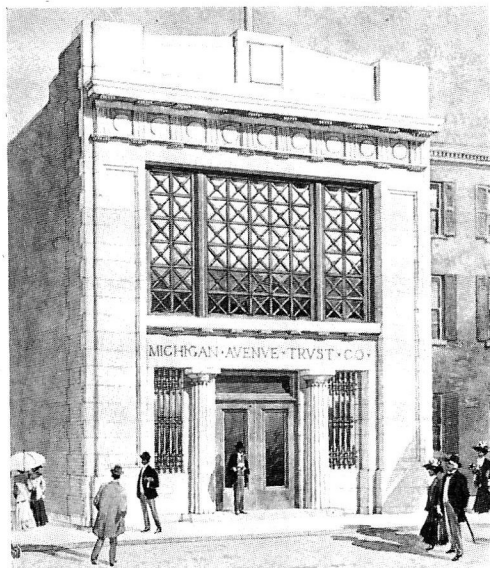
**New Building for Union & New Haven Trust Co.
New Haven, Conn.**
Designed, Built and Equipped under one Contract
by Hoggson Brothers, New York



Granville H. Le Maistre, Merion, Pa.
D. Knickerbocker Boyd, Architect



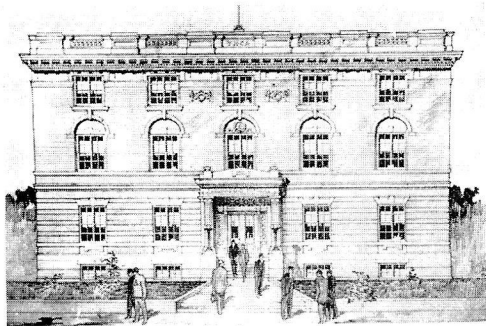
James I. Lytle, State College, Pa.



**New Building for Michigan Ave. Trust Company
Chicago, Ill.**
Designed, Built and Equipped under one Contract
by Hoggson Brothers, New York



The Gregg Carriage Co., Philadelphia, Pa.
Harry E. DeHoff, Architect, Philadelphia, Pa.



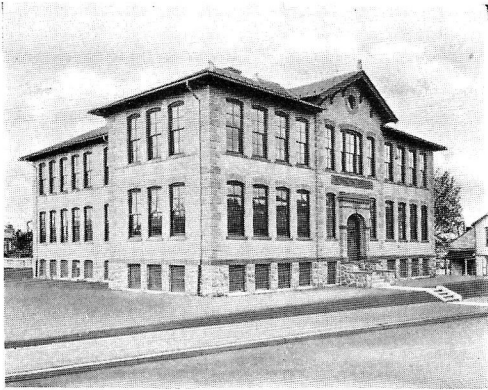
William G. Cook Memorial Y. M. C. A. Building
Trenton, N. J.
Wm. W. Slack, Architect, Trenton, N. J.



Geo. B. Geiser, Oak Lane Park, Pa.
Valentine B. Lee, Architect, Philadelphia, Pa.



Parish House, Old St. Paul's Church, Norfolk, Va.



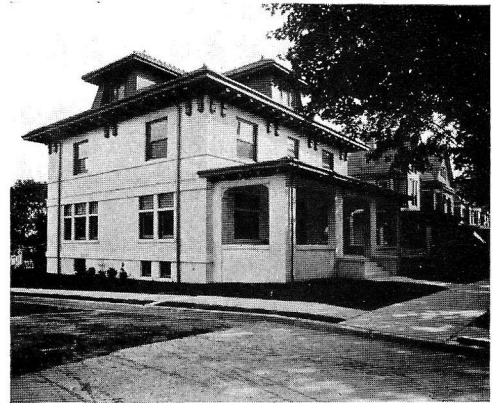
Washington School, Emaus, Pa.



John Kelly, Harrisburg, Pa.
T. H. Hamilton, Architect, Harrisburg, Pa.



W. A. Smalley, Germantown, Pa.



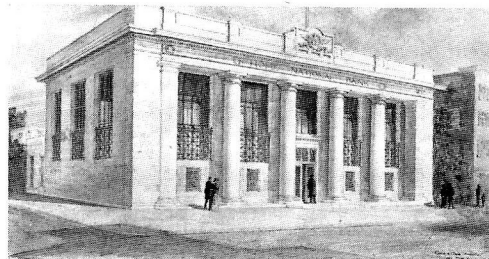
J. H. Bowman, Allentown, Pa.
Ephraim M. Pickins, Architect, Allentown, Pa.



Plymouth Hall Apartment Bldg., Baltimore, Md.
George R. Morris, Architect.



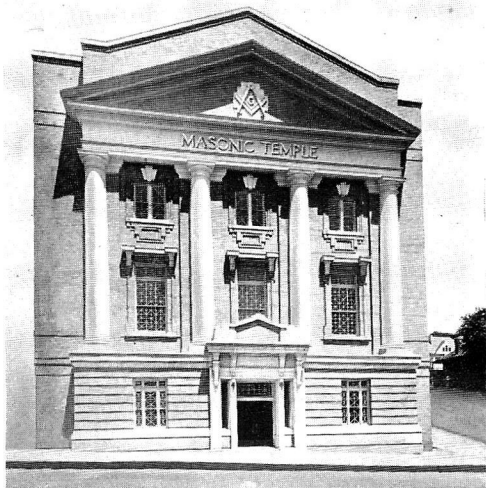
Wm. H. Vinall, Tarrytown, N. Y.



New Building for Home National Bank,
Brockton, Mass.
Designed, Built and Equipped under one Contract
by Hoggson Brothers, New York.



George J. Guth and Bro.
832 Hamilton St., Allentown, Pa.
Ephraim M. Pickins, Architect
31



Masonic Temple, St. Joseph, Mo.
Rudolph Meser, Architect



F. W. Gubbins, Springfield, Mass.
32



Jane Chinn Hospital, Webb City, Mo.



Success Construction Company
1419-1423 Wilkins Ave., New York City

Testimonials

THE GRANGE NATIONAL BANK of Chester County

Downingtown, Pa.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Gentlemen:

The heating plant installed in this building about two years ago has given excellent results. **Vapor-Vacuum Heating Kriebel System**, to us, seems as near perfect as any heating system could possibly be. You are at liberty to refer any intending purchaser to us in regard to the above.

Yours truly, M. S. BROADT, *Cashier*

Norfolk, Va.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Gentlemen:

We are pleased to say that the system of heating installed in the Parish House and old St. Paul's Church is very satisfactory and the Rector, Building Committee and Vestry of the church are more than pleased with this System and have given it the highest recommendation, and beg to say that one or two other churches are now talking of installing your System.

Thirty-one minutes from the time the match was put to the boiler in the Parish House, every radiator in the Parish House was hot. This Parish House has 1650 feet of radiation. We do not know of any other system that would have heated same in this time. The system is absolutely noiseless.

We heartily recommend this system to any one thinking of installing a Heating Plant. Yours truly,

VIRGINIA CAROLINA SUPPLY CO.,

PFL/G

Phillips F. Lee

108 Upland Terrace, Collingsdale, Pa.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Gentlemen:

Regarding the **Vapor-Vacuum Heating System** installed in my residence in place of the hot-air apparatus, I would like to say that, with the same amount of coal consumed, we have been able to heat the whole house comfortably with the System, whereas with the hot-air plant we managed to warm a couple of rooms so that with the aid of wraps we could exist—this of course in cold weather.

The feature of the **Vapor-Vacuum System** that appeals most to me is that which permits me to regulate the quantity of heat at the radiator. By this means I obtain a mild degree on days that are mild and when the thermometer drops I can open up and let the whole system fill.

With a first-class boiler and your system properly installed any man will have the heating question answered to his satisfaction.

Yours very truly, H. J. SUTTON

VOLKERT O. LAWRENCE

Melrose Park, Pa.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Gentlemen:

The heating System which you installed in my Melrose residence has given perfect results. Fourteen tons of pea coal used during the last winter kept every room at a temperature of 70 degrees, while previously eighteen tons of nut coal used with the Old System did not give sufficient heat to make even the living rooms comfortable during cold weather.

Yours very truly,

V. O. LAWRENCE

THE GREGG CARRIAGE CO.

1926-32 Arch Street, Philadelphia

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Gentlemen:

Your **Vapor-Vacuum Heating System**, which was installed for us last spring, is indeed a satisfaction, inasmuch that it responds quickly all over the building, four stories (52 x 150 feet), without any pressure at the boiler; is economical in the use of coal and the best of all, that heat can be held in any of the radiators after banking the fire for the night, which aids us so much in our Varnish rooms and which was sadly lacking in our previous Steam Heating Plant.

Wishing you success and cheerfully recommending your System, we remain,

Yours respectfully,

THE GREGG CARRIAGE CO.,

Harry F. Keachline, *President*

East Downingtown, Pa.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Dear Sirs:

Your letter of the 12th inst. received and in reply would say, that I am very much pleased with the **Vapor-Vacuum System of Heating** you installed in my house about a year ago. It has given entire satisfaction.

Wishing you continued success, I remain,

Yours truly, JOSIAH SWANK

Whitford, Penna.

VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Dear Sirs:

In reply to your letter of recent date, will say that the **Vapor-Vacuum Heating Apparatus** has been giving very good satisfaction this past winter.

Yours truly, RICHARD W. THOMAS

VAPOR-VACUUM HEATING CO.
Edge Hill, Pa.
Drexel Building, Phila., Pa.

Dear Sirs: The Vapor-Vacuum Heating System you installed in my house is very satisfactory. I have no trouble in heating any room in my house to any temperature I desire.

Yours truly, J. F. WILLIAMS

ELIAS NUSBAUM & BRO.
General Electrical Contractors

1520 Sansom Street
Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: In answer to yours of the 10th inst., as to my experience with your Vapor-Vacuum System of Heating, installed by the Penna. Engineering Co., would say that you may consider this answer as entirely unsolicited inasmuch as it has been my intention to write to you, but I have neglected it from time to time. You hardly need a letter from me as to my opinion of your system, for the fact stands that after my first season's use of the apparatus, I recommended it to my brother, who also installed it.

I consider the system a clever bit of steam engineering. It is thoroughly simple but gives remarkable results. There is no noise, no ugly smell in rooms from air valves, nor the inevitable drip from the condensation accompanying such valves. The circulation is free, so that the whole system heats up rapidly. The feature of being able to control the amount of heat in any radiator is of incalculable value, for a room need not be a bit hotter than wanted; and one need not wait for hours for the temperature to change, as is required in a hot-water system and which cannot be had at all with an ordinary steam job. The vacuum feature in itself would recommend the system for the economy produced. Your system has passed through three winters in our home and Mrs. Nusbaum agrees with me that it is efficient, economical and easier to handle than a hot-air furnace, inasmuch as it required about half as much coal and the consequent less attention and firing.

We were formerly unable to get our house warm. It stands high and is exposed to the northwest on one end, but now we have no trouble to keep it comfortable.

Wishing you success, I am,

Very truly yours, ELIAS NUSBAUM
W. Sharpnack Street, Mt. Airy.

304 Earlam Terrace, Germantown, Phila.
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Dear Sirs: I wish to tell you we are very much pleased with the Vapor-Vacuum System of Heating, after the first winter. I find it very easy to manage and perfectly satisfactory, and would recommend it very highly.

Yours truly, E. E. BEAN

VAPOR-VACUUM HEATING CO.
Rosemont, Pa.
Drexel Building, Phila., Pa.

Gentlemen: We wish to compliment you on the very great success your system of Vapor-Vacuum Heating has proven over the ordinary Hot-Water System.

The work you did for us in the eight houses at Llanarch, Pa., has proven very satisfactory. Have had no complaints from the tenants—in fact they are very much pleased with results.

Hoping we may soon have another job for you, we remain,

Yours respectfully,
(Signed) WORRELL & WATERS

VAPOR-VACUUM HEATING CO.
Kennett Square, Pa.
Drexel Building, Phila., Pa.

Gentlemen: I have just installed a Vapor-Vacuum Heating System in my residence, which tested out to my entire satisfaction. The reason for adopting this System was, from my actual knowledge of the work the system was capable of doing in our office building.

In an ordinary steam plant you find upon replenishing with fuel that your heat goes down and radiators get cold, where with the Vapor-Vacuum System the vacuum holds the heat in radiators until your fire has recovered its normal condition. Another point of great advantage is that there are no air valves or expansion tanks, which are always a continual source of annoyance. With the Vapor-Vacuum System we did not have to add any water to the supply with which the boiler was started, as there is no evaporation.

This is the most complete system of heating which has come to my notice, and I looked into the matter very thoroughly before making final decision. You make no mistake in deciding to install the Vapor-Vacuum Heating System either in a business building or the home; it is simplicity, economy and comfort combined. What more do we need?
V. V. H. Co. 2 Respectfully, S. P. GREEN

STATE COLLEGE
Pennsylvania
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: I am very well pleased with the Vapor-Vacuum System of Heating, which was installed in my residence last fall. I have been able to heat the whole house to my entire satisfaction, and were I to install another Plant, I would not use any other System, and can heartily recommend your System to any one who wishes to have their building satisfactorily heated, with a small consumption of fuel.

Wishing you much success I beg to remain,
Yours very truly, JAMES S. LYTLE

E. R. GREEN & SON

Kennett Square, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

Replying to your inquiry regarding our heating plants will say that we are as well pleased as ever and during the heating season we heated the large post-office building and our own office building at an average cost of \$10.91 for fuel consumed each month, a trifle higher than last year, but this was the case everywhere on account of the atmospheric conditions. It was a hard season to keep warm, but not hard with the **Vapor-Vacuum System**.

As to the cost of heating my residence I cannot give you the figures, since the range was supplied from same supply of coal. I can say this, that we never were uncomfortable on account of lack of heat. Just a few days ago, (in June) the temperature dropped to 66°, in twenty-five minutes mercury stood 73°. Not so slow for a perfectly cold boiler. We are perfectly satisfied.

Very respectfully,
S. P. GREEN

Philadelphia.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

The changing of my Steam Heating Plant at my residence in Germantown, last October, into your **Vapor-Vacuum System of Heating** has proven a very satisfactory improvement to my home this winter. In my opinion it is certainly worth all it has cost to make the change, and I heartily recommend your apparatus in preference to either Steam or Hot-Water Heating. I include Hot-Water because I have a Hot-Water Heating Plant at my shops and have, therefore, some means of judging.

Yours truly, FRED'K A. MURSET

New Hyde Park, L. I.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

We take great pleasure in stating, after a winter's test of your **Vapor-Vacuum System**, we have found it all and even more than you claimed for it. I have one in my own house, and after being absent over a week's end, I heated my house on my return, to comfortable temperature, in twelve minutes by the clock.

Yours very truly,
MODERN CITY REALTY CO.,
Le Baron Bull, *Secretary*

Narberth, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

The heating plant in my residence at Merion continues to give satisfaction. I have no figures on the amount of coal used last winter but I consider it a small coal consumer.

Yours truly,
C. P. COOK

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Philadelphia.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

Feeling that you might be interested in a report as to the results of your **Vapor-Vacuum System** installed in my residence, I take pleasure in saying that I had your **Vapor-Vacuum System** installed in my house last winter, and am perfectly satisfied with it in every respect.

My house is a large one—containing fifty-two windows and five doors—is open on all sides, and from October to April I burned fourteen tons of Buckwheat coal—the house being comfortably warm at all times—in fact it was hard to keep the heat down at first—but a little experience soon enabled me to regulate the System, and it is now in a satisfactory working condition, and am more than satisfied with this system.

I shall be pleased, at any time, to recommend your System and trust your future buyers will meet with as much success with this System as I have had.

I enclose you a photograph of my residence, which may be of some use to you.

Trusting you will accept this letter in the spirit in which it is written, and wishing you further success, I am,

Yours very truly,
FRED SCHUESSEL, JR.

6515 N. 2d Street Pike, Lawndale, Pa.

Downingtown, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

In reply to your favor of August 10th, would say that the **Vapor-Vacuum Heating System** which you installed in my residence last fall gave me entire satisfaction during the last winter. I ran the heater the entire season without putting in additional water in the boiler, and from the appearance of the water in the gauge glass I can run another season without any additional water. This would prove conclusively that there was no wastage of steam.

I heated my house during the coldest weather without noticing more than two or three ounces of pressure on the pressure gauge.

Yours truly, FRANK PARK

STEWART BROS.
Contractors and Builders
2526-28 Orkney Street
Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

We have had the **Vapor-Vacuum System of Heating** installed in our houses 2527 and 2529 N. Fifth Street, Phila., Pa., and have received perfect satisfaction from same. It is all that it is claimed to be.

Yours very truly, STEWART BROS.

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5th and Cherry Streets, Phila., Pa.
VAPOR-VACUUM HEATING CO.

Drexel Building, Phila., Pa.

Dear Sirs:

In November, 1907, we wanted to change the 3d floor of our Warehouse into a Salesroom, which necessitated additional radiation and consequently a change in our Low-Pressure Steam-Heating Plant.

At your suggestion we had a Vapor-Vacuum Heating Plant installed in this portion of our building, and had it connected to our Low-Pressure Steam-Heating Plant, so that a part of our building is heated with the ordinary Low-Pressure Gravity Steam System, and the other part with your Vapor-Vacuum System, but both from the same boiler. The system is working satisfactorily and we find it a decided improvement over the old System. We are heating this additional Salesroom with no additional cost of fuel.

Yours truly,

WM. H. HORSTMANN COMPANY,
E. Eckert, *Vice-President*

Narberth, Pa.
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

The Vapor-Vacuum Heating Plant that you placed in our house at Merion has, for the two seasons that it has been in use, given splendid satisfaction.

It is a small coal consumer, easy to regulate, and I regard it as the best system of house-heating now known.

Very cordially, C. P. COOK

Prospect Plains, N. J.
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Dear Sirs:

The Vapor-Vacuum System you put in my house in the fall of 1908 has given entire satisfaction; one half the System heated the entire house last winter. I like it very much better than the old style of air-escaping valves. I think any one using this System would never go back to the old system.

My house is 40 x 30 feet with 9½ and 8½ feet ceilings with all large rooms and situated in the country.

Very respectfully, C. H. EDWARDS

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

I have used your Vapor-Vacuum Heating Plant for more than a year, and have found it very satisfactory in every way.

MRS. H. B. PLUMER,
750 Lincoln Drive, Germantown, Phila.

WM. ECKBOLD'S SONS
Machinery

711 East Girard Avenue

Philadelphia

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

In reference to your Vapor-Vacuum System, which you installed in my residence, 433 East Girard Avenue, in October of 1908, would say that the same has been entirely satisfactory and would recommend it to any one wishing to install such a system, as we have been very comfortable during the cold weather but have had no chance yet to test it to 70 degrees in zero weather, while we feel it will do as guaranteed.

Yours very truly,

CE/ME

CHARLES ECKBOLD

FORREST HOTEL
Daniel J. Hoey
Proprietor

Conshohocken, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

I take pleasure in informing you that the heating apparatus with your Vapor-Vacuum System, lately fitted up in my hotel, works with entire satisfaction.

Although the building is a large one—60 x 40 feet—with an adjoining barber-shop included, the heating is perfect.

Satisfied that your system is a success,

Respectfully,

DANIEL J. HOEY

St. Matthew's Methodist Episcopal Church
53d & Chestnut Sts., Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Philadelphia, Pa.

Gentlemen:

Responding to your recent inquiry, it gives us pleasure to report that your system of Heating which was installed in our Church in October, 1908, has stood well the test of the past two winters and has proven satisfactory in every way.

The materials used we believe were the best of their kind, and the workmanship first-class in every particular. The easy control of the volume of heat in each radiator is a feature we appreciate very much.

We shall be pleased to show the installation to any interested party who bears a written request from you, at any time when the church is open.

Sincerely yours, FITUS K. WITWER,
President Board of Trustees

Attest, WALTER G. PATTERSON, *Secretary*

FRANKLIN CHEMICAL WORKS
Manufacturing Chemists
Second, Bristol and N. American Sts.
Philadelphia.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: In reply to your letter of the 10th inst., asking our opinion of your **Vapor-Vacuum System** installed at our office, would state that the same is working very satisfactorily, using exhaust steam from our engine, and we can only speak in the highest terms of the same.

Yours very truly,
FRANKLIN CHEMICAL WORKS,
W. E. Ridenour, *President*

WER/Y

Philadelphia
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: Your inquiry as to what satisfaction the **Vapor-Vacuum Heating System** introduced by you in the Christ United Evangelical Church at 12th and Oxford Streets, Philadelphia, has given, would say that it has proven quite satisfactory, the church keeping comfortable on all occasions during the past winter.

Wishing you much success, I remain,
Yours very truly,
WM. GRUHLER,
Vice-President Board of Trustees

Philadelphia
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: Replying to your favor of August 10th, would say that I have been using your System for a couple of years and am well pleased with it. We get splendid results in the house. The Plant works noiselessly, is economical in the use of fuel and is easy to manipulate. I am,
Very truly yours,

W. A. SMALLEY
Queen Lane W. of Stokely Street,
Germantown, Pa.

Prospect Plains
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: I have been using your system for three winters with entire satisfaction and will recommend it to my friends who anticipate installing a heating plant. I heated my house, country place 40 x 30, ceilings, 9½ and 8½ ft., with 9 tons of coal. Remaining yours with satisfaction,

C. H. EDWARDS

29 East Court St., Springfield, Mass.
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: In regard to your **Vapor-Vacuum Heating Plant** which was installed for me last year, in a few words, it is a *Dream*.

I started fire in October to 1st of May; used fifty-four (54) tons, including Hot-water Heater. It was my first experience with **Vapor-Vacuum Heating**. I think I could run it much less another year.

It was a long, steady, cold winter, and my apartment contains — ft. of radiation and a — ft. boiler. Have recommended your system to our local builders, as I understand they are putting it in an apartment house they have in course of construction.

Yours truly,
F. W. GUBBINS

EMAUS PUBLIC SCHOOLS
Emaus, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: We, as a School Board, are very well pleased with the good results obtained by the **Vapor-Vacuum Heating System** installed in our new building, and cannot recommend this system too highly to any school district in need of a perfect Heating and Ventilating System.

Very truly yours,
(Signed) M. M. MARKS, *Sec'y.*
Emaus Public Schools, Emaus, Pa.

Bethlehem, Pa.
VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: Your letter requesting a testimonial received some time ago. Would say that on account of the incompleteness of the plant during the coldest part of the winter, we could not give it a fair test.

We will say, however, that it is a coal saver, as we have consumed about 4 tons less coal than the other side of the house.

Yours truly,
EZRA A. DOSTER

JULIUS CHRISTENSEN
Drexel Building
Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen: Your favor of the 16th inst. at hand. In reply, would state, that the heating plant installed by you in my residence at 6823 Quincy Street has proven very satisfactory indeed. I am not, at this time, able to give you the amount of coal used during the last heating season, but I can say that the plant installed by you has saved me about one-third of the cost of heat, as compared with what I paid the Germantown Steam Heating Company.

Yours very truly,
JULIUS CHRISTENSEN

JC-S.

BERGER BROTHERS COMPANY

VAPOR-VACUUM HEATING CO.
Philadelphia, Pa.
Drexel Building, Phila., Pa.

Gentlemen:

I received your valued inquiry of recent date relative to my heating plant, and, in response, wish to say that I consider it the finest system that I know of.

I have never seen nor heard of anything that could be run on such a satisfactory basis with as little trouble and inconvenience, and what is more important, it is a fuel economizer.

I have had the system two years, and the average amount of coal consumed thus far is 20 tons of Buckwheat per season.

This I consider remarkable, when taking into consideration the size of the Boiler and the size of the home, also the fact that the Buckwheat coal is only one-half the price of the large coal.

I have talked about this system to all of my friends, and they are simply astonished at the pleasing results, and when in want of a heating plant they will surely adopt this system.

Very truly,
WILLIAM BARTH

Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

I take great pleasure in recommending your **Vapor-Vacuum System of Heating.**

My house has been heated by ordinary steam heat and until I used your method it was very unsatisfactory. Since using your system my house has been, night and day, at a uniform temperature and I will cheerfully recommend same to any person who may want heat and comfort combined.

Very respectfully yours,
NORMAN H. STEVENS

JOHN KELLEY
3 North Third Street

Harrisburg, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

Your system has been working satisfactorily for two winters. I burnt only about 14 tons of coal last winter.

Very respectfully,
JOHN KELLEY

THE FLOREX GARDENS, Incorporated

VAPOR-VACUUM HEATING CO.
North Wales, Pa.
Drexel Building, Phila., Pa.

Gentlemen:

It gives me pleasure to state that the **Vapor-Vacuum Heating System** installed by you in my home, 1522 Poplar Street, Philadelphia, works to my entire satisfaction. It is economical, both in fuel and labor, and the fact that I can use Buckwheat coal at car-load price of \$3 per ton is of itself a great saving. The installation of the system was done in a very workmanlike manner.

Very truly yours,
D. FUERSTENBERG

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Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

As chairman of the building committee of the Fletcher Methodist Episcopal Church, I am pleased to state the **Vapor-Vacuum System** that you put in our church has proved very satisfactory. We have been running it for two winters and have been able to heat our building satisfactorily in all kinds of weather, and there has been no trouble occasioned by the system at all.

We feel that you have a very fine system of heating and take pleasure in recommending it.

Yours truly,
W. E. MARBAKER,
Chairman of the Committee

V. GILPIN ROBINSON
Twelfth Street above Chestnut
Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

In reply to yours of June 16, 1911, I beg to say that the heater you placed in my office building at 10 South Avenue, Media, Pa. has been entirely satisfactory.

My coal bills since January 1, 1911, aggregate 5½ tons — \$36.50. The heater consumes about a ton of coal a month. I would be glad if you would let me know whether or not this consumption of coal, in your judgment, is excessive. In other words, I want to know just what the heater will do and if there is any waste, check it.

Yours truly,
V. GILPIN ROBINSON

Hume, Va.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

In reply to yours of the 16th will say that we are very much pleased with the **Vapor-Vacuum Heating System** installed in our house January 1st, 1910.

The plant was fired entirely with wood. We figure that it took very little more wood to heat the whole house, which consists of nine rooms and two bathrooms, etc., to 70, than it formerly took to heat three of the rooms at irregular temperatures by air-tight stoves.

I don't think there can be a better system of heating than your **Vapor-Vacuum** and I have seen quite a few others. If I can be of any future service to you, command me.

Respectfully,
C. J. YATES

LEHIGH VALLEY RAILROAD COMPANY

VAPOR-VACUUM HEATING CO.
New York
Drexel Building, Phila., Pa.

Gentlemen:

The **Vapor-Vacuum Heating System** placed in my house at Flemington, N. J., has been most satisfactory and has done all that was expected of it.

Yours very truly,
CHAS. S. LEE

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FIRST METHODIST EPISCOPAL CHURCH

Salem, N. J.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

The heating plant installed by you gives the best of satisfaction. Our church is a large building, greatly exposed on all sides, and has always been a hard church to heat until you put in the **Vapor-Vacuum System**. During the coldest days of the two past winters with your system we have had no trouble at all. Our people could always come to church knowing that the building would be warm. Some of the oldest members have said to me that never before had the church been heated. The first year we burned 22 tons of coal; the second year 24 tons of coal. It is surely a coal saver.

Yours,
JOHN GOORLEY,
Pastor

C. M. WALKER'S SONS
Farmville, Va.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

Replying to your favor of the 16th inst., I beg to advise that my heating system proved entirely satisfactory in every respect, and I consider the **Vapor-Vacuum** as good a system as can be installed for dwelling house heating and as a great fuel saver.

Yours very truly,
H. W. WALKER

State College, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

I have the **Vapor-Vacuum Heating System** installed in one of my houses here and find it to give complete satisfaction especially as an economizer in fuel.

I shall be very glad to recommend this system to any of my friends who are interested in the subject of heating.

Yours very truly,
MRS. ALICE S. WEAVER

FRANKLIN CHEMICAL WORKS

Philadelphia, Pa.

VAPOR-VACUUM HEATING CO.
Drexel Building, Phila., Pa.

Gentlemen:

In reply to your letter of the 16th inst. in reference to the use of the **Vapor Heating**, would state we operate our heating system at practically no expense, as we use the exhaust from our engine, which is sufficient for heating our office building.

Yours very truly,
FRANKLIN CHEMICAL WORKS,
H. E. RODENOW,
President

WER/R.

Partial List of Recent Installations

W. B. Smith, Narberth, Pa.
J. A. Kramer, 912 N. 3d St., Harrisburg, Pa.
Edward Stetter, Royersford, Pa.
John Fisher, Allentown, Pa.
Murray Roat, Kingston, Pa.
Blum & Eyster, York, Pa.

I. W. Liem & Co., 215 S. Main St., Wilkes-Barre, Pa.
Samuel Zearfoss, Hummelstown, Pa.
Presbyterian Church, Kennett Square, Pa.
Wm. Ralston, Royersford, Pa.
E. Marcus Kemmerer, Salsburg, Pa.
First National Bank, Cresson, Pa.

Hunsicker Flats, 9th & Linden Sts., Allentown, Pa.
Warren B. Keim, Camp Hill, Pa.
Parsonage of St. John's Church, Riegelsville, Pa.
Mrs. Weaver, State College, Pa.
Mr. Arthur Richards, Royersford, Pa.
Mr. Speece, Wilkes-Barre, Pa.

First National Bank of Riegelsville, Riegelsville, Pa.
Dr. S. Elizabeth Winter, West Conshohocken, Pa.
Port Kennedy School, Port Kennedy, Pa.
St. Joseph's Parish School, Easton, Pa.
D. M. Ellis, Henderson Station, Pa.
E. Clyde Eicholtz, Drexel Hill, Pa.

A. H. Lippincott, St. Martins, Pa.
A. A. Albright & Son, Allentown, Pa.
Chas. Hess, Allentown, Pa.
J. Ellwood Lee, Conshohocken, Pa.
Wm. H. Bishop, Harrisburg, Pa.
Frank Althouse, Harrisburg, Pa.

St. John's Episcopal Rectory, E. Mauch Chunk, Pa.
Sacred Heart School, Latrobe, Pa.
G. J. Guth Bros., Allentown, Pa.
Miss A. Pierce, Kirkland, Pa.
James Lutz, Harrisburg, Pa.
Powell Smith, Salem, N. J.

The Fleischman Co., Trenton, N. J.
W. B. Taylor, Hightstown, N. J.
Albert Davis, Salem, N. J.
Edward Davis, Salem, N. J.
Sunbeam Printing Co., Salem, N. J.
Fred Smith, Paterson, N. J.

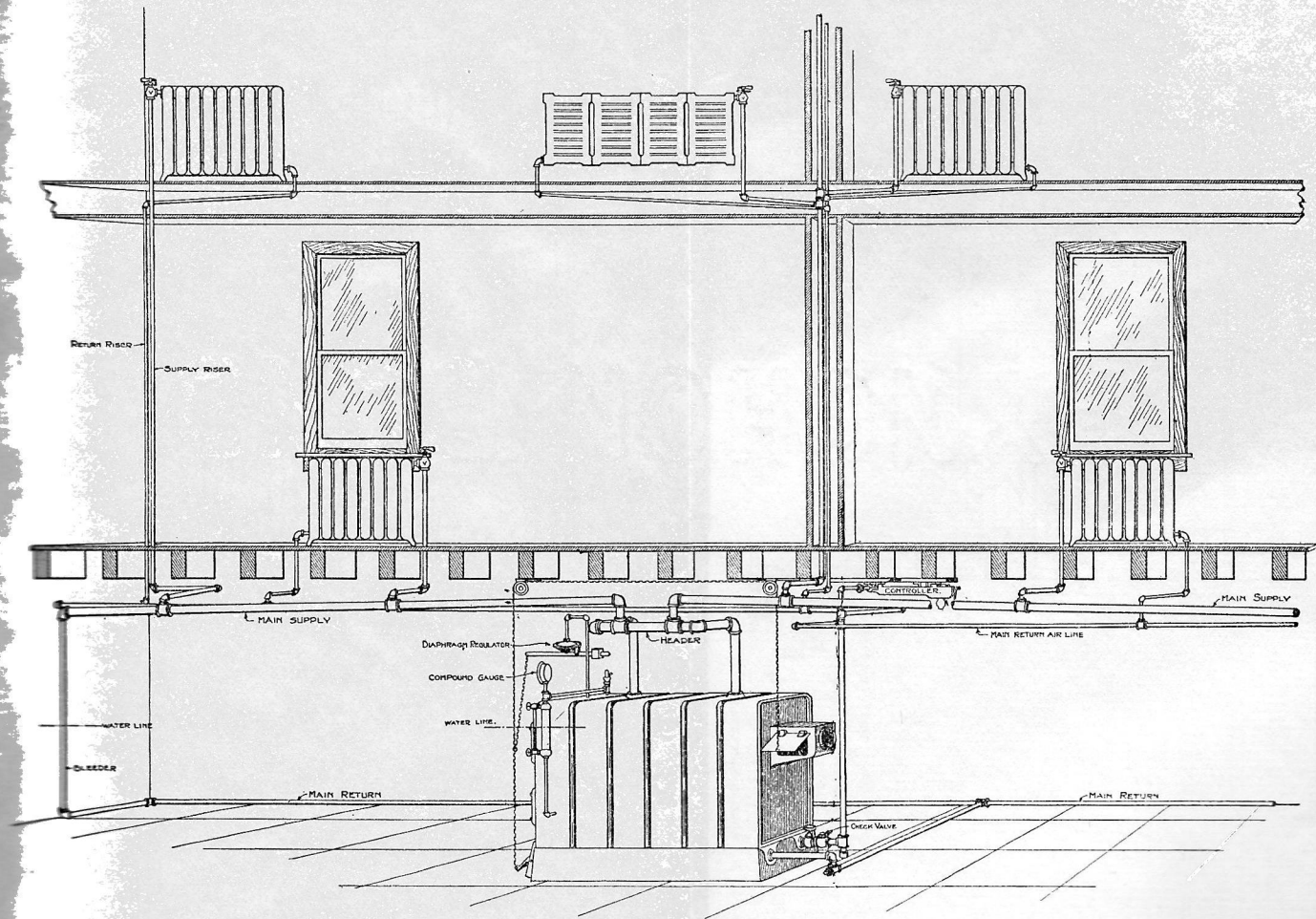
John Eckbold, Franklinville, N. J.
William Fox, Alloway, N. J.
George Ely, Hightstown, N. J.
Charles S. Lee, Flemington, N. J.
John M. Rowe, Merchantville, N. J.

"Miller" Building, Elizabeth, N. J.
Dr. Beckman, Farmville, N. J.
First Methodist Church, Millville, N. J.
John F. Norton, Topeka, Kan.
E. W. Youngman, Columbus, Kan.
W. K. Calhoun, Fort Scott, Kan.

Partial List of Recent Installations

Continued

- Square Deal Plg. Co., 807 W. Douglas Ave., Wichita, Kan.
Rev. Watkins, Fort Scott, Kan.
South School, Fredonia, Kan.
Jefferson School, Vola, Kan.
Mr. Eiserman, New Hyde Park, L. I.
Le Baron Bull, New Hyde Park, L. I.
- L. B. Adams, Massapequa, L. I.
Wm. Condit, Seaford, L. I.
First National Bank, Freeport, L. I., N. Y.
Norman McGlashan, Douglaston, L. I., N. Y.
Tuxedo Station, Erie R. R., Tuxedo, N. Y.
Miss I. Darling, Tarrytown, N. Y.
- Chas. Schleining, Stapleton, S. I., N. Y.
Sisters' Home, Stapleton, S. I., N. Y.
St. Paul's Memorial Hall and Church, Norfolk, Va.
Mr. Brittingham, Portsmouth, Va.
Mr. Hammond, Barryville, Va.
High School Building, Berryville, Va.
- Mrs. Chappell, Farmville, Va.
S. W. Wilbur, Norfolk, Va.
Tayloe Gwathmery, Norfolk, Va.
Mrs. Katy Buck, Front Royal, Va.
Professor Porter, Front Royal, Va.
M. C. Simpson, Boyce, Va.
- Col. Stuart Walker, Martinsburg, W. Va.
J. N. Thatcher Co., Martinsburg, W. Va.
George Vanmetre, Martinsburg, W. Va.
D. H. Dean, Sedalia, Mo.
R. F. Dean, Sedalia, Mo.
Mr. Berry, Kansas City, Mo.
- Michigan Avenue Trust & Savings Bank, Chicago, Ill.
T. A. DeLowery, Waterbury, Conn.
W. G. Snow, Meriden, Conn.
Dr. Schavoir, Stamford, Conn.
Bayard Barnes, New Haven, Conn.
Mrs. H. H. Keedy, Hagerstown, Md.
- Dr. Geo. R. Andrew, Detroit, Mich.
Dr. W. M. Harvey, Detroit, Mich.
A. T. Baldwin, Detroit, Mich.
Ronald Gies, Detroit, Mich.
Louis A. Kalsow, Detroit, Mich.
F. W. Gubbins, Springfield, Mass.
- C. Reitzel, Waterloo, Ontario, Can.
S. J. Williams, Berlin, Ontario, Can.
G. S. Clark, Washington, D. C.



Vapor-
Vacuum
Heating
Kriebel
System

