1897

A Central Heating-Plant for the Rhode Island College

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A CENTRAL HEATING-PLANT FOR THE RHODE ISLAND COLLEGE.

There are at present five large college buildings and a number of smaller wooden ones. A drill hall is now in process of construction which will take the place of several of these wooden structures; and in the course of a few years, if the institution grows as rapidly in the future as in the past, more buildings will be needed. Eventually there may be a group of buildings enclosing a campus of about ten acres.

The ideal way of furnishing heat to such a group would be from a central station. This would mean the location of boilers and other necessary apparatus in a separate building, and the supplying of heat under ground to the other structures.

The situation and natural surroundings of the College are very favorable for such a plant. The station could be placed near the brook ~~which is~~ about 235 feet north of the experiment station, and lines of pipes be run from here to the other buildings. Probably the best arrangement of pipes would be to start a main from the heating station, run it

east of the experiment station and then have it divide into two branches. One would go straight ahead for about 800 feet, passing all the buildings on the west side of the campus, then turn to the east for about two hundred feet to reach the building on the south side. The other branch would turn to the east for about four hundred feet, passing the drill hall, then would run south for about eight hundred feet and connect with the buildings on the east side. By this system the buildings on all sides of the campus would be easily reached and supplied with steam. The slope of the ground would be sufficient to enable the water of condensation to flow back to the station by gravity and without the aid of suction pumps.

The buildings already in use that would be included in this system are the boarding hall, the dormitory, and the experiment station, requiring respectively ten, thirty, and ten Horse Power of boilers. The drill hall when completed will consume about fifty, making a total of one hundred Horse Power. Then two boilers rated at one hundred Horse Power each would be sufficient to supply with heat all of the buildings now here and several of the proposed structures.

In heating these four buildings, about eight hundred feet of pipe would be required; with all the proposed buildings on this line, the length of pipe needed would be about twenty-six hundred feet, or nearly half a mile. Four hundred Horse Power of boilers would be necessary.

The size of the trunk of the steam main would have to have to be nine inches in diameter, and the return at this place five inches in diameter: of the branch that turns to the east, seven inches for the steam main and three and one-half inches for the return; and of the branch that goes straight southward, seven inches for the steam main, and three and one-half inches for the return.

These pipes would either be laid in the ground or run in a tunnel. Probably the tunnel, although the more expensive in the beginning, would be the more economical in the end. It is true that, if the pipes were well covered and protected and great care were taken in laying them, the former system would possibly be as economical for a few years as the tunnel system; but after a while the insulation of the pipes would become poor and decayed, thus making the

passage of steam through them very expensive.

To remedy this difficulty, the pipes would have to be entirely unearthed and recovered. If a pipe should spring a leak or become blocked in any way, the line would have to be taken up until the cause was discovered and the difficulty overcome. In this way repairs on the line of pipes would necessitate the expenditure of a large amount of labor and money, which would soon cover the additional cost of a tunnel.

Probably one advantage of laying the pipes in the ground would be, that the repeated removal and replacement of the line would furnish a valuable opportunity for the students of the Agricultural Course to investigate the rudiments and principles of drainage more thoroughly than they would otherwise be able to do.

With a tunnel such difficulties would be greatly lessened. The tunnel would need to be about three feet wide and six feet high, and to be well drained. The pipes would be suspended along the sides. With this arrangement repairs could easily be made and the system kept in better condition, defects sooner noted and corrected, and a better rate of

efficiency obtained than with the other.

Now let us look at some of the advantages of a central heating plant. First, the station used for furnishing heat could also supply light and power to the other buildings through this same tunnel. A building sixty by sixty-five would be ample to contain the apparatus and machinery for supplying all the heat, light, and power that will ever be needed.

As a second advantage may be reckoned the extra room gained in the other buildings. In the dormitory a space eighteen by thirty-six is taken up by the heating apparatus and the storing of fuel, which could be used very profitably as a recitation room. With separate heating plants, a similar amount of space would be required in each of the other buildings; and after a while, this would be equivalent to a large structure.

Again, with a central heating plant, less help is required. Last winter there were ten fires in the different buildings to be looked after; nearly all within a radius of about one-quarter of a mile from the experiment station. These were tended mainly by one person; but being so far

apart, they kept him busy from early in the morning until late at night. The work was really too much for one person. With additional buildings and a heating system in each one, more firetenders will be needed, whose time would be spent in going from one building to another. With a central heating-plant, all the apparatus would be in one place and could be tended by half the number required with the separate-plant system, and the work would be more satisfactory.

The greatest advantage would be the lessening of danger in the other buildings. With separate plants, the fireman can spend only a little time in one place; and it is possible that something connected with the apparatus may get out of order, while he is away and before he can return be the cause of a serious as well as expensive accident. With a central plant, the attendants would be near by all the time and would notice anything wrong at once; and make it right immediately. If a boiler should explode in a central plant, this would surely be wrecked, but the damage done would be by no means so great as if the same thing happened in a building where several thousand dollar's worth of apparatus was kept and where many persons would probably be

gathered.

Thus it is very evident that economy, convenience and safety will eventually demand that the buildings connected with the Rhode Island College of Agriculture and Mechanic Arts be heated from a central station.

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