CENTRAL HEATING.

If a general inclination towards an improvement is an indication of its near approach, central heating is not far away. Not far away, that is, for ordinary application. In special cases of grouped buildings and for parts of towns there are already numerous plants in the United States extending from a mile or so of pipe to over fifteen miles and the supply of some 500 houses.

The advantages of central heating in the way of doing away with discomforts are obvious. There will be no coal to be brought in, no ashes to be taken out, no dangerous boiler, no man to mishandle it, no dirt, no noise, no filling up the cellar with stuff that makes the parts that are free unfit for their uses. But the advantages are not only negative. Connection with a well ordered system implies heat in the doubtful days of early winter and early spring, without consideration of the policy of "starting the furnace" or "letting the furnace out." It means full heat at any hour of the day or night. It means also, if steam is the means of heating, that water for baths and household purposes may be heated from the central station. And a due humidity of air by the emission of steam could be (perhaps has been) regulated by an automatic contrivance.

As to cost—there is in the first place a saving for the consumer in boiler installation, attendance, costly coal, and perhaps fire insurance, all of which is to be reckoned as an offset to the cost of heating from a centre. And, on the side of cost, there is but one item—a great one, the street mains—which is not an actual economy for the community in the way of reduced waste of natural resources; and this economy must find its bearing upon the consumer in the end. With operations on a large scale, the cheapest kind of fuel is used, and the cost of handling it is likely to be kept down by placing the station with regard to easy supply. There is a saving in the cost of attendance, for, when the boilers needed for a district are combined in one plant, few hands comparatively are needed to operate them. And the skilful operation of coupled boilers can make savings which cannot be got out of single boilers, which have to be adapted to the coldest weather and half the time are not working economically. There must also be a saving to the community in the reduction which central heating stations would make in the aggregate cost of boiler insurance.

The great economy, however, which is to be effected by the introduction of central heating is the utilization of exhaust steam. The use of steam for the production of power means the generation of nearly ten times as many heat units as can be converted to mechanical energy. That is to say, nearly 90 per cent. of the steam generated is discharged from the exhaust pipe. Railway and lighting companies throw away in this manner heat which, if it were applied, would soon pay for the first cost of laying street mains by means of which to use it and make it profitable.

It follows that the economical application of central heating is in combination with the production of light and power. Whatever may be the doubt about the safety as an investment of a central heating plant which stands alone, there seems to be no doubt whatever that as a by-product, utilizing steam heat that would otherwise be wasted, it is a safe "proposition."

The more comprehensive the combination the better. Power and heat or lighting and heat are each better than power alone or lighting alone; but the combination of power and lighting and heat in one station is better still. All concentration for one thing, reduces personal attendance, and it increases the opportunity of using economizers and superheaters which are more applicable to large and steady running plants than to small plants which run unevenly. But there is another and a large field of economy opened up by the manner in which the separate functions of a combination play into each other's hands. There will often, for instance, be a coincidence in the periods of high requirements of power or lighting (and therefore of much generation of steam) and the periods when heat is especially wanted. Thus the season of maximum light requirement is also the season for heat supply; and the heavy morning demands for heat correspond with the "peak-load" periods of an electric railway.

The question as to the form of heating seemed to be rather in favor of steam before the issue recently by Mr. Bernard Green, superintendent of the Library of Congress, assisted by Prof. S. Homer Woodbridge, of a report upon a central station for power and heating for the thirteen existing and projected Government buildings on the Mall and in the vicinity of the White House. This report charges heavily in favour of hot water.

The choice of system depends rather upon the preponderance of advantage than the absence of disadvantage in either system. Both have objections which must be met, and the American District Steam Company, of Lockport, N.Y., who have put in a large number of plants, claim (in a pamphlet printed four years ago) to have met some of the principal objections to steam which are stated in the report of Messrs. Green and Woodbridge. These objections are in the way of difficult maintenance due to expansion strains, corrosive, condensation, etc. These it is possible for ingenuity to meet. The objection to hot water is the water itself, and it is difficult to get over the pressure of water raised to a height, the force of its expansion when freezing, and its determination to leak if it can and to find its way downstairs without making any noise about it. These objections are of less importance in public buildings which are in the charge of skilled attendants night and day. And for residences heated by an individual plant these are objections of less importance than the difficulty of managing steam without a skilled attendant, and the danger of mismanagement. But when the boiler is not in the householder's hands the balance of advantage to him seems to be in favour of steam.

Apart, however, from the care of having a destructive agent like water continually racing through the house within confining walls from which a pinhole would constitute a means of escape, the case for hot water, in the report of Messrs. Green and Woodbridge, is very strong.

They propose to drive water through the pipes