The greatest example of the safety of the bored-tube well is afforded by this city and county of London, in which there are hundreds of such wells still yielding good water, though the water level in the chalk whence most of them draw their supplies has for many years been 100 ft. more or less below sea level, thus offering every temptation to the entrance of water from the Thames. The London area is, of course, rendered particularly safe by the fact that there is so thick an impervious stratum between the surface and the water-bearing chalk.

As a matter of precaution old wells should everywhere be filled up with clean material when discarded from use, or otherwise they will but continue to act as sink holes for the further pollution of the strata to which they afford easy access for surface-water drainage.

The bored-tube well should be lined with stout, socketed special driving pipe, screwed to butt and with painted threads. It may be used with confidence, even if put down in the middle of a city.

In supplying a small town, apart from the absolute necessity of purity, the general somewhat exigeant demands made for larger schemes cannot be obeyed. The old adage, that half a loaf is better than no bread, bears strongly on the subject, and so long as the half loaf is sound and wholesome too much must not be demanded of it in respect of size.

A demand of twenty gallons per head per day is unlikely to be reached for some time by people accustomed to the limited use of pail-carried water. But a supply creates the will to use it, and while it is desirable that every house should be assessed for water rate, it does certainly seem desirable that a portion of the charge for water should be according to meter reading, so as to tend to the reduction of careless use, leaking taps, etc. So much waste only reduces the capacity of the mains to cope with the fair demand, and a wasted water supply also reduces the value of the sewage if this is turned upon a farm, and generally enhances the cost and difficulty of dealing with it.

Careful use of water is particularly to be fostered in a small town with a pumped supply to a tower tank, for the capacity of the tank is so very much a question of the demand, and first cost is so very important in most of our small country towns which have apparently arrived at a quiescent steady population. Very few of them are likely to put on serious growth, and for the few which will do so it is not justifiable in the case of the many to incur heavy expenditure on the off chance that this one town will be one selected by Fate for future great expansion. When expansion does come let it in fact be made to pay for itself.

WATER FILTRATION AT EDINBURGH, SCOTLAND.

The Edinburgh and District Water Trustees have adopted the report of a sub-committee recommending the installation of twelve of Messrs. Bell's eight-foot diameter patent pressure filters at Fairmilehead, to filter the supply of water from the Talla. The scheme originally proposed was for the erection of seven sand filters and a large storage reservoir. The twelve filters proposed to be put down at present will deal with 2,000,000 gallons per twenty-four hours, and these, with the existing filters at Alnwickhill, are expected to serve the city for a number of years to come. It will be necessary to have a balancing tank at Fairmilehead to equalize the flow of water from the Talla, but this tank will not be an expensive item. The approximate cost of the whole work is put at $100,000, while the batteries of filters could be extended so as to deal with the 10,000,000 gallons daily proposed under the original scheme at a further cost of $150,000. The present proposed instalation of filters and relevant works will take about a year or eighteen months to complete, and is regarded as completing the Talla water scheme.

CONCRETE AS A SAFEGUARD AGAINST FIRE.

In a recent discussion of the heat resistance of concrete, Mr. Leonard C. Wason, president of the Aberthaw Construction Co., Boston, showed that the great conflagrations of recent years have firmly established confidence in the fire-resisting qualities of concrete. One of the elements in the durability of concrete is the fact that a conflagration is of necessity of relatively short duration. This feature is of vital interest to manufacturers who desire strength and durability combined with the power to resist the effects of fire. Mr. Wason stated that if cement be continuously exposed to a temperature of 900 degrees it will ultimately disintegrate, but much higher temperatures may be endured for shorter periods. It will stand a temperature of 500 degrees for an indefinite period. Fire tests of five hours' duration, conducted with temperatures of 1,700 to 2,000 degrees, have shown that the temperature was not sufficient to destroy either the cement or the aggregates buried within it. Although limestone would ultimately be calcined or glass-melted, this would not occur before the cement itself was disintegrated. Nevertheless, quartz sand and broken trap rock may properly be regarded as best suited to resist fire. The use of cinder is not particularly objectionable except as regards the strength of the concrete used in connection with reinforcement. Small lumps of coal, half an inch from the surface, have been found entirely unaffected by the heat after severe tests.

Mr. Wason referred to tests which he had personally examined in which the amount of pitting did not exceed one inch, usually much less. The conductivity was so poor that he was able to bear his hand on the top surface of a floor five inches thick without burning after a fire had been raging below for five hours. It has been the practice of the Aberthaw Construction Co. to provide an extra inch of concrete, over and above the calculated amount, around the reinforcement of columns, and sometimes of beams, the strength of which is thus rendered entirely independent of the flames.

It may appear paradoxical as regards the conductivity of concrete to note that plastering on the interior of cold walls will frequently freeze when it is put on. In one of Mr. Wason's experiences solid walls were 18 inches thick, the external temperature was from 10 to 15 degrees and the internal 45 to 50 degrees; nevertheless, the plastering invariably froze. In another case plastering froze where the walls were not quite dry, 10 inches thick, with the same internal temperature, while the external was from 25 to 30 degrees. Undoubtedly the facts that the wall is continuously exposed to the outer temperature, and that the vaporizing of the water in the plaster reduces its temperature are important factors in the cooling of the inner surface.

On the other hand, the non-conductivity of concrete in the form of a steam conduit is well shown by another experience of Mr. Wason's. Such a conduit, about 500 feet long, was built between a boiler-house and a mill, just wide and deep enough to receive two six-inch and two small pipes. The large pipes, which carried live steam, were not covered in any way. After all pipes had been laid in the trench a concrete cover was constructed over them so as to render the conduit waterproof against ground water. It was carried only 2½ feet below the surface, but not below the frost line. It was open at both ends to make it easy to observe whether there was any leakage or not. The assumption was made that if any vapor escaped from either end of the conduit there must be some leakage, which would permit the water to vaporize. After the conduit was dried out, which took about two weeks, no vapor was observable. Since then the loss of heat through the concrete has been relatively small.

The warmth of the concrete building is recognized on all sides. This feature, combined with its power of resistance to fire and its durability, renders such a structure practically unapproachable in its advantages.