a dangerous and poisonous gas in large quantities, which is discharged through the ventilation-grates, contaminating the atmosphere, and it also presses through the seals of the gully and other traps. If a town's sewers are constructed so as to be capable of handling both sewage and rainstorm water, then they must be 75 per cent. too large for the quantity of straight sewage discharged. The rainstorms will only average about one hour per week, which leaves 167 hours a week for the sewers to act as a chamber for the generating of dangerous gases from putrid matters.

It is impossible to tell what size of drain or conduit will be necessary to cope with the waters discharged by a rainstorm, and if the heaviest rainfalls are provided for by the combined system, large expensive pipes must be laid at a great depth, necessary to collect the domestic sewage and trade refuse as well, while by the separate system large volumes of water which only fall probably six times in a year, could be easily conducted to the proper outfall by surface or shallow inexpensive channels, and by the natural water-courses. On the other hand it is easy to compute the quantity of flow of sewage, for it is very regular and only changes in quantity during the night, Sundays, and holidays; there is seldom more than 15 gallons of domestic sewage discharged per head per day from water closets, baths, wash basins and sinks. The average trade refuse can be secured by reading the water meters, telling the amount of w[illegible]r used by each manufacturer or firm, and an estimate may be taken of the discharge from public baths, stables, or any other unusual sewage a town may have to handle. Thus a reasonably close figure can be got that will answer to give the size of pipes for each district and the main trunk sewer, and the quantity discharged will usually vary so very little that a small margin only in the size allowed to carry the estimated quantity will be necessary to meet contingencies.

Drains laid down the proper size to carry the necessary quantity of flow will always be self-cleaning, if given a very moderate downward grade, and the sewage passed through them will keep continually on the run, from the moment it enters the drain to the time it reaches the final outfall of the sewer; therefore the sewage will be delivered at the outfall just as fresh as when it entered the drain, because it is impossible for moving sewage to ferment, decompose, or putrify, and no dangerous gases will be generated. The public will be protected from inhaling sewer gas by the adoption of the separate drain system if properly and intelligently arranged, independent of the traps and ventilating pipes, which are always introduced into good and efficient plumbing. A drain is greatly to be preferred that is continually getting scoured and cleaned by its own flow, than a sewer that is only scoured when a violent rain storm occurs, or when it is artificially flushed by an expensive and often complicated flushing machinery.

But there is a claim for separate drains over and above the before-mentioned advantages, viz., the disposal and the purification of the sewage before being allowed to enter the rivers or fresh water streams, ponds, lakes, etc. It is about as easy and inexpensive to purify a gallon of straight sewage as it is to clarify and purify a gallon of straight sewage adulterated by 75 per cent. of fresh water, and it is obvious that both the first cost of construction and the annual cost of management of any sewage works working under the separate system of drainage, must be considerably less than where the combined system is adopted. On account of the severity of the Canadian climate in winter, and the great heat in summer, water carriage of excrements will be almost in general use throughout the country, and it is the duty of all engineers to see that their bad effects be reduced to a minimum by confining them into as small a space as can be used for their transmission with quickness and safety to the place appointed for their filtration, purification, or discharge on to the land out of harm's way. About the only serious objection to the separate system of sewers is that the soot, dust and manure from the streets is washed into the storm water drains. Now these substances, if allowed to remain motionless after being soaked by water, will ferment and putrify. Should arrangements be made to bring this material into the sewers, then we must accept also the sand, grit and other heavy substances from the surface of the roads, which soon choke up the gullies and channels. To overcome the difficulty of this objectionable matter passing into the surface or rain water sewers, the storm water might be forced through a large settling tank or reservoir immediately before it discharges into the natural watercourse of sufficient size to allow time for the solids to settle. But even if it is allowed to enter the stream without settling, the fluid will be as pure and free from poison as any of the other water flowing into the river from land and stagnant pools. The whole secret of healthy drainage is to keep the dangerous solids and ingredients contained in sewage moving briskly until they can expel with safety to the public health the dangerous gases they contain, and this can only be done by having a separate drain for the conveyance of sewage and trade refuse.

With regard to the expense, I may say that any experienced and intelligent engineer, with a proper amount of foresight, may install a separate system at about the same price as a combined system. Should the geographical position of any town be such that to introduce two separate systems of drains and sewers will increase the cost considerably, the advantages derived from having the two distinct systems to the preservation of the public health is many times more than the extra cost, and is a good return for the money spent. The dirt from the streets should not be allowed to lie in the pockets of the street gully traps. It is a serious menace to the health of the people. The dirt should pass along with the water and be kept in lively motion until it gets clear away from the people and to a place where the filth can be better handled, or where it will be purged of its dangerous elements. By the double or separate system there would be no need of street gullies with traps; simple grates would answer.

METAL IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the metal imports from Great Britain during September, 1896, 1897 and the nine months to September, 1896-1897.

	Month of Sept.,		Nine months ending Sept.,	
	1896.	1897.	1896.	1897.
Hardware and cutlery	£6,195	£7,041	£48,867	£50,672
Pig iron	3,838	1,240	21,230	5,298
Bar, etc.	1,101	977	12,626	7,572
Railroad	28,047	171	158,153	38,893
Hoops, sheets, etc.	4,354	13,792	35,758	55,954
Galvanized sheets	5,291	7,346	42,212	35,547
Tin plates	6,401	30,073	91,909	132,849
Cast, wrought, etc., iron	5,103	3,887	40,651	25,957
Old (for re-manufacture)	1,058	1,937	14,862	5,191
Steel	10,519	6,258	73,060	41,061
Lead	1,015	5,170	10,486	19,062
Tin, unwrought	419	2,403	11,716	13,814

THE Bridgewater Power Co., Bridgewater, N.S., which is putting in an electric plant, has recently purchased from S. Morgan Smith Co., York, Pa., a 30-inch McCormick turbine, mounted on horizontal shaft.