garbage disposal in Worcester, Mass., the writer estimated the total annual cost at \$2.30 per ton, which was considered rather liberal at that time, but was predicted on an ample plant and good operation. As a matter of fact, contractors seem willing to pay not much over \$1 per ton for city garbage, and in some cases less, some contract prices being as follows:-

		Price paid by con- tractor to city per ton
Town.	Year.	of delivered garbage.
Minneapolis, Minn	1918	\$1.26
Grand Rapids, Mich.	1917	0.45
Portland, Ore.	1918	3.90
Newark, N.J.	1919	1.20*
St. Paul, Minn.	1917	0.80
South Bend, Ind		OR PERSON NAMED IN THE PERSON NAMED IN
Anderson, Ind	1917	1.00

*Figured at 8 times the pound price of live pork in Chicago.

The operation of hog farms is not an easy matter and varies considerably in different places, which may possibly explain the abandonment of hog feeding as a method of disposal in some cities. Of first importance is a superintendent who knows the feeding and care of hogs. But sanitary considerations are likewise important and must supplement the experience of the hog feeder. The more important items

(a) Methods of feeding, (b) area required, (c) pens and runways, (d) vaccination, (e) disposal of unconsumed garbage, and (f) suppression of rats and flies.

The design will depend somewhat upon the location of the hog farm. For instance, in a report on hog feeding of garbage at Rockford, Ill., the writer recommended that "no garbage be fed to hogs in buildings closer than 300 ft. from a traveled roadway, and that garbage fed out of doors on platforms should be at least 600 ft. away."

Of paramount importance, however , are matters of house treatment, frequency and adequacy of collection, and other items affecting the public comfort and the quality of the garbage.

Incineration

The carbon contained in refuse is a valuable constituent. The carbon content of garbage is low, generally less than 5%, and is not sufficient to warrant economical recovery. However, the carbon content of ashes and rubbish is higher, and so-called "mixed refuse" (garbage, ashes, and rubbish as collected from houses) contains as much as 20% of carbon. This gives it a value of about one-fourth that of coal (80% carbon), and as many municipalities are now paying upwards of \$5 per ton for coal for pumping stations and lighting plants, the indicated gross value of a ton of mixed refuse is \$1.25. Assuming an average evaporation of one pound of steam from and at 212 deg. F. per pound of refuse, this is equivalent to 61/4 cts. cost per 100 lbs. of steam, as compared with 4 cts. per 100 lbs. of steam used in the Milwaukee incineration tests in 1910.

A plant to burn mixed refuse should be especially designed for that purpose. The details of design cannot be

taken up in this paper, but there are a number of plants which have been giving good service for periods up to 12 years as at Westmount, Savannah, Altanta, Milwaukee, West New Brighton and elsewhere. A record of power production at the Milwaukee refuse incinerator is shown in Table 2, and a record of operation of the refuse incinerator at Westmount, P.Q., in Table 1.

In projects for mixed refuse incineration, the effect (of collecting the refuse mixed) on the house treatment and cost of collection are important factors.

Rubbish Sorting

Rubbish contains much material which can be sorted out and sold, such as paper, rags, metals, rubber, shoes, and the like. During the war, the government urged that this should be done as a conservation measure, and there appears to be no reason why the practice is not good.

The gross value of rubbish varies with the market over a wide range. From 35% to 50% of the rubbish by weight

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TABLE 2- POWER PRODUCTION AT REFUSE INCINERATOR,

Month, 1917. Total	k.w. hrs.	Month, 1917. Total	k.w. hrs.
January	3,466	July	86,404
February		August	
March		September	107,057
April	59,160	October	59,607
May		November	16.884
June		December	

Year's total 515,794

Average percentage of refuse incinerated:-Garbage, 68.84; ashes, 26.49; rubbish, 4.49; manure, 0.17. Average evaporation per pound of mixed refuse, 1.626 lbs.

can usually be recovered under normal city conditions. These materials bring in a gross revenue of about \$2 per ton of rubbish on pre-war prices. The figures from the Columbus municipal rubbish sorting plant are given in Table 3. The selling price of rubbish materials in the Chicago market from quotations dated November 7th, 1919, are as follows:-

Metals—			
Copper	8 0.16	per	pound
Light copper	.15	66	"
Brass—red	.16	66	"
" —heavy yellow	.101/2	66	66
" —lighter yellow	.09	"	"
" —yellow boring	.09	66	"
" —red boring	.14	66	"
Lead	.051/4	44	"
Zinc	.05	"	44.
Mixed iron	12.00	per	ton
Rags-			and the contract
Mixed rags	.03	per	pound
Bagging	.02	"	"
Paper—			
Newspaper	.70		100 lbs.
Mixed paper	.60	66	" "

TABLE 1— F	1907*	1908 13,641	1909 14,331	1910 15,280	1911 17,008	1912 20,878	1913 18,731	1914 23,800	1915 20,800	1916 19,500
Fixed charges:				COST PER	R TON				,	10,000
Interest Sinking fund Depreciation Operating charges.	\$0.19 0.04 0.13 0.55	\$0.17 0.08 0.12 0.52	\$0.19 0.06 0.15 0.46	\$0.25 0.08 0.21 0.48	\$0.25 0.07 0.21 0.59	\$0.21 0.05 0.17 0.48	\$0.23 0.05 0.17 0.65	\$0.18 0.04 0.15 0.55	\$0.20 0.05 0.15 0.65	\$0.22 0.05 0.17 0.71
Total cost	\$0.91 0.36	\$0.89 0.31	\$0.86 0.40	\$1.02 0.40	\$1.12 0.46	\$0.91 0.40	\$1.10 0.45	\$0.92 0.48	\$1.05 0.48	\$1.15 0.46
Net cost*Ten Mont	\$0.55	\$0.58	\$0.46	\$0.62	\$0.66	\$0.51	\$0.65	\$0.44	\$0.57	\$0.69