Rubber—		
Automobile tires	.03	per pound
Tubes	.09	" "
Mixed boots and shoes	.07	" "
Arctic shoes (cloth covered)	.04	" "

A rubbish sorting plant comprises a receiving room and a wide belt conveyor travelling slowly up between two platforms on which the sorters stand. Along the outside of each platform are bins for storing the sorted materials. Below the bins are baling presses and other apparatus used to prepare the materials for shipment. An incinerator, usually with a boiler, is required to burn the unsorted rubbish. Such plants are in operation at Buffalo, Rochester, Pittsburgh, Columbus and elsewhere; and in many places rubbish materials are sorted on the dump and sold. The revenue from the sale of the sorted materials does not usually much more than pay for the cost of operation.

TABLE 3—REVENUE FROM COLUMBUS, OHIO, MUNICIPAL RUBBISH SORTING PLANT

	1917.	1918.
Bottles	$ 365.21	$ 116.33
Paper	1,859.06	1,876.06
Iron	145.53	58.19
Rags	579.94	239.45
Cans	452.59	1,600.31
Metal	114.39	5.50
Miscellaneous	5.03	28.26
	$3,521.75	$3,924.10

Reduction of Garbage

Reduction of garbage is a chemical and mechanical process whereby the garbage is separated into four parts, viz.: Volatile matter driven off as gas; water; grease; and dry material which is somewhat stable, mostly fibrous, and of vegetable and animal origin, and called "tankage." The grease and tankage have market values.

TABLE 4—VALUE OF PRODUCTS FROM GARBAGE

Market price of grease, per pound.

Year.	Chicago.	Cleveland.	Columbus.
	Cts.	Cts.	Cts.
1913	....	4.26	3.73
1914	....	4.17	4.32
1915	....	4.41	3.76
1916	7.29	6.50	5.17
1917	7.34	8.00	7.50
1918	11.57	13.50	11.76
1919	....	5.0 to 7.6	.....

Market price of tankage, per ton.

Year.	Chicago.	Cleveland.	Columbus.
1913	....	$6.00	$6.79
1914	....	6.75	7.41
1915	....	8.75	7.00
1916	$4.16	7.75	8.50
1917	4.16*	9.58	10.84
1917	10.27**	....	.....
1918	10.27*	18.50	20.50
1918	16.85**	....	.....
1919	.....	10.00	.....

*To August 1st. **Balance of year.

The amount of these materials which can be recovered depends upon the character of the garbage and the process used for recovery; 2½% of grease and 11% of tankage by weight of raw garbage may be recovered. The gross value of these constituents depends upon the market price, which varies greatly, as shown in Table 4. The present market price of grease is about 6 cts., and of tankage about $10 per ton, which would indicate a gross value of garbage for the reduction process of $4.10 per ton. During the war these prices were doubled.

Many processes have been devised for reducing garbage, cost of which fall into one of three groups designated as follows:—Drying method, cooking method, and Cobwell process.

The Cobwell process is the most recent and may be described as the "dehydration, or drying, of the garbage by cooking at low temperature while immersed in a solvent, the extraction of grease from the dried garbage by the same solvent, the recovery of the solvent for further use, and the production of grease and dry tankage for the market." Almost all of the action takes place in closed reducers and the connections. At New Bedford, Mass., the recovery by the process is stated to be 4% of grease and 15% of tankage, and at Los Angeles, Cal., 15.5% of grease and 3.1% of tankage.

TABLE 5—MATERIALS RECOVERED AT CLEVELAND AND COLUMBUS REDUCTION PLANTS

Cleveland

Year.	Total tons of garbage reduced.	Percentage of total garbage recovered. Grease.	Tankage.
1905	30,382	2.63	....
1906	34,891	3.07	....
1907	37,606	3.14	....
1908	41,242	3.46	9.2
1909	44,525	3.70	11.3
1910*	44,747	3.75	13.2
1911	46,562	3.53	12.8
1912	43,555	3.38	11.5
1913	52,384	3.13	9.7
1914	55,730	2.95	10.5
1915	66,271	2.81	10.4
1916	63,450	3.06	11.2
1917	56,121	2.73	11.3
1918	57,254	2.36	11.0

Columbus

Year.	Total tons of garbage reduced.	Percentage of total garbage recovered. Grease.	Tankage.
1911	17,534	1.85	12.9
1912	18,789	2.72	11.6
1913	20,711	2.72	10.5
1914	21,629	2.73	9.7
1915	22,909	2.21	10.0
1916	21,862	3.08	10.3
1917	17,127	2.26	10.21
1918	15,630	2.16	10.26

*At Columbus operation was begun in July, 1910, and there was no percolation until January, 1912.

In the drying method, the garbage is first dried and then degreased in naphtha percolators. The grease recovery is comparatively low and the tankage recovery somewhat higher than in other processes. At the Chicago reduction plant, which uses the drying method, the percentage of grease recovered is 2.0, and of tankage 22.7, for the year 1918.

The cooking method comprises a first cooking of the garbage with live steam under pressure, then pressing out the free water and grease, then drying the pressed material, and finally recovering additional grease by percolation with a solvent. This process is used at Cleveland, Columbus and elsewhere. The percentage of grease and tankage recovered is shown in Table 5. Garbage reduction plants are usually located at some distance from built-up districts, which requires a transportation of the garbage. This and other local factors, such as size of city, should be considered in connection with this method of disposal.

There are, in addition to the more generally used methods mentioned above, several comparatively new methods not yet tried out on a very large scale. The Union Poultry Food Co.,