

as 100%, but 25% on wages or materials would be 5.7% and 13.5% respectively on the total costs.

The method by which Table I. is figured is shown by the following sample calculation:

Census Figures for Totals per Establishment.

Primary horse-power	69.5	
Capital invested	\$68,500	
Expenses—		
Salaries and wages	16,250	
Materials (including power)	45,200	
Miscellaneous	7,240	
From which the following is deduced:		
Interest and depreciation, say 12%....	\$ 8,220	10.7%
Salaries and wages	16,250	21.2%
Power: 69.5 h.p. @ \$50 per h.p.-year..	3,475	4.6%
Raw material and general supplies	41,378	54.0%
Miscellaneous	7,240	9.5%
	<hr/> \$76,563	<hr/> 100.0%

The relative position of industries as power users can be obtained in a different manner and is shown in Table II. Columns 1, 2 and 3 are calculated direct from the census figures. The last or fourth column is an arbitrary attempt to establish a numerical rating, and while objections may be made to the method, it does establish clearly which industries may be classed as using a relatively large amount of power on the three principal bases. For instance, it is obvious that the cost of power must be a more serious consideration to numbers 27 and 28 than to numbers 3 and 4.

Some of these industries using relatively large amounts of power are shown in Table III. in a similar manner to those in Table I. It would not do to assume a figure of \$50 per h.p. year for all these because in some cases this would be prohibitively expensive power.

Steam power for blast furnaces costs about \$70, with gas engines using blast furnace gas from \$30 to \$40. In cement mills the power required is relatively

Table I.—Percentage Cost of Power in Miscellaneous Industries. Power Assumed at \$50 per h.p.-year.

	Interest and deprecia- tion at 12% on capital.	Salaries and wages.	Power at \$50 per h.p.- year.	Raw materials, etc.	Miscel- laneous.
	%	%	%	%	%
Boots and shoes..	9.8	43.3	1.8	41.4	3.7
Breweries	21.7	16.7	4.5	20.7	36.4
Canning and pre- serving	9.2	17.3	2.6	62.7	8.2
Carriages, wagons	13.0	28.2	2.5	49.1	7.2
Clothing	5.4	24.8	0.4	56.5	12.9
Creameries	3.2	5.5	1.9	86.2	3.2
Farm implements	20.7	26.0	3.4	37.2	12.7
Flour & grist mills	4.8	3.9	4.9	83.4	3.0
Foundry and ma- chine shops ..	14.4	33.0	3.4	39.4	9.8
Furniture	9.5	43.8	3.9	34.6	8.2
Lumber, saw and planing mills..	5.9	34.5	5.9	42.3	11.4
Meat packing ...	3.4	5.3	0.3	87.8	3.2
Paints and varnish	10.0	15.1	2.2	61.6	11.0
Woollen goods ..	11.8	18.8	4.1	60.2	5.1
	<hr/> 10.2	<hr/> 22.6	<hr/> 3.0	<hr/> 54.5	<hr/> 9.7

very large but their large plants and good load factor give them low costs and several concerns buy hydro-electric power at cheap rates. Pulp mills are usually in districts where water power is available at \$18 to \$30 per h.p.-year. The figures for cost of power have therefore been chosen accordingly to give an approximate idea of the relative cost of power in each case.

Looking at these large power-using industries from the location point of view, it will readily be seen that while the cost of power is a serious consideration, matters of raw material, labor market and distribution facilities are still more serious and that it would require a good deal in addition to cheap power to determine their location.

Table II.—Relative Position of Industries as Power Users.

Industry.	Horse Power.			Relative Use of Power. of 1, 2 & 3.
	1. Per Capita.	2. Per \$1000 Capital.	3. Per \$1000 Value of Product.	
1. Clothing	0.14	0.16	0.07	0.12
2. Boots and shoes ..	0.45	0.43	0.19	0.36
3. Canning and pre- serving	1.13	0.68	0.52	0.78
4. Meat packing	1.92	0.55	0.02	0.82
5. Foundries and ma- chine shops	1.40	0.57	0.71	0.89
6. Farm implements..	1.66	0.39	0.68	0.91
7. Car-shops, railroad	0.98	1.23	0.72	0.98
8. Carriages & wagons	1.52	0.72	0.79	1.01
9. Paints & varnishes	2.55	0.56	0.45	1.13
10. Furniture	1.54	0.98	0.93	1.15
11. Electrical machinery and apparatus	1.51	0.60	1.41	1.17
12. Woollen mills	2.07	0.84	0.83	1.25
13. Smelting, lead ...	3.45	0.20	0.16	1.33
14. Creameries	3.22	1.42	0.37	1.67
15. Petroleum refining	5.45	0.50	0.38	2.11
16. Breweries	5.20	0.56	0.93	2.23
17. Cotton mills	3.35	1.58	2.06	2.33
18. Grindstones	3.72	1.16	3.38	2.75
19. Lumber, sawing and planing mills	3.62	2.51	2.46	2.86
20. Bricks and tiles...	3.99	1.95	3.68	3.21
21. Chemicals	7.50	1.34	1.77	3.54
22. Smelting, copper .	9.40	1.42	0.42	3.75
23. Iron and steel roll- ing mills	8.1	2.09	2.13	4.11
24. Sugar and molasses	10.70	1.05	0.58	4.11
25. Oil and cotton seed	9.00	2.11	1.30	4.14
26. Flour & grist mills	12.90	2.44	0.97	5.68
27. Portland cement ..	12.6	1.98	5.9	6.83
28. Paper & wood pulp	16.0	3.19	4.86	8.02
29. Blast furnaces	27.2	2.41	3.00	10.87
30. Carbide of calcium	37.4	12.1	14.5	21.3

In this connection it is of interest to consider the proportion of power owned by and the proportion purchased by industries. The census summaries of the total power used in all industries show that the percentage owned by the establishments using it is 97% in Canada and 90% in the United States, so that the proportion of purchased power is still quite small in relation to the whole and there must still be a very wide field for central station power.

It is also of interest to observe the large proportion of power, other than water power, used in both Canada and the United States, by industries that are essentially large users of power. This is shown in Table IV., which