

2071

REPORT
of
Committee on Thesis

The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by Guy Carson Miller for the degree of Master of Arts. They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Lotus D. Coffman
Chairman
Roy G. Blakey
Joseph Peterson

REPORT
of
COMMITTEE ON EXAMINATION

This is to certify that we the undersigned, as a Committee of the Graduate School, have given Guy Carson Miller final oral examination for the degree of Master of Arts. We recommend that the degree of Master of Arts be conferred upon the candidate.

Minneapolis, Minnesota

May 31 1917

Lotus D. Coffman
Chairman

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Finance in City Schools.

A Thesis submitted to the
Faculty of the Graduate School of the
University of Minnesota

by

Guy C. Miller

In Partial fulfillment of the requirements
for the degree of
Master of Arts

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M614

Finance in City Schools.

Introduction

Dr. George Drayton Strayer while at Columbia University in 1905 made an investigation along very much the same line which I am pursuing except that he studied larger cities, ten to fifty thousand population. On page seventy nine of his "City School Expenditures," Dr. Strayer gives one of his important conclusions when he says, "From the data given above, it is my judgment that an ideal budget would give to each of the principal items not less than the first proportion mentioned in the table below, (Table XXXVI) nor more than that indicated by the last figure, except that the cities spending an unusually large amount per pupil should, I believe, spend a relatively larger proportion for teaching and supervision, and for text books and supplies; while the proportion spent for fuel, repairs, and janitors' salaries should increase more slowly."

Table XXXVI

	% of Total	% of Total
Teaching and Supervision	from 70 %	to 75 %
Supervision alone	" 7 %	" 10 %
Teaching alone	" 60 %	" 68 %
Janitors' Salaries	" 5 %	" 7 %
Text Books and Supplies	" 4 %	" 6 %
Fuel	" 5 %	" 7 %
Repairs	" 3 %	" 5 %

Therefore when the amount of money available for school purposes is known, it is an easy task to tell (within reasonable limits) how

much of it should go to each of the different items of the budget.

The Problem.

The question of finance in the public school is a vital one. As each step, in the way of progress in the educational system, is considered, we must regard its effect upon the cost. At every turn we are hampered and hindered by the lack of funds; finance is a fundamental problem. Consequently the most important question before us is to do the most possible with the somewhat limited funds at our command. The purpose of this study is to determine whether smaller cities than those which Dr. Strayer used would show a very different percentage for the different items of school expenditure. Extreme individual cases will be studied in an attempt to arrive at some conclusions as to which item or items are most likely to suffer when other items receive considerably more than the median percentile expenditure. The cities of Minnesota and of Iowa will be studied in order to learn whether certain items in each state tend to stand above or below the median of the United States.

Source of Data.

In attempting to find satisfactory data, Dr. Strayer was confronted with the fact that school reports, National, state, and local, did not give the expenditures in sufficient detail to be of value in his investigation. Since that time, however, the reports of the United States Commissioner of Education have given the expenditures for each city according to a certain fixed form. From such a report it is possible to compare different cities as to any

item which is included in the expense of the school system. Owing to the fact that the reports above referred to gave the information I desired in a form which was readily available, they were used as the source of my data. The latest report which could be obtained when this investigation was begun in the autumn of 1916, was for the school year 1913-1914.

Table I gives the original data used in this investigation. All the material, except the last three vertical columns at the extreme right of the table, the (b) division of each page, was taken from pages 149 to 163 inclusive of the report of the Commissioner of Education for the year ended June 30, 1914 Volume II, and is concerned only with cities from five to ten thousand inhabitants. States represented in this report by four, or a smaller number of cities were arbitrarily omitted. This left a total of four hundred forty seven cities from which five were later omitted as these cities reported no money spent for teachers' salaries. It was assumed that there was an error in the reports of those cities for it seemed absurd to suppose that a public school could be conducted without some expenditure for salaries of instructors.

In Table I one is the number of the city; column two gives the number of dollars spent for the board of education and business offices; three, the money spent for superintendent's office; four, salaries and expenses of supervisors; five, salaries and expenses of principals; six, salaries of teachers; seven, text books; eight, stationery, supplies, and other instruction expenses; nine, wages of janitors and other employees; ten, fuel; eleven,

water, light, power, janitors' supplies, etc.; twelve, maintenance-repairs, replacement of equipment, etc.; thirteen, libraries; fourteen, promotion of health; fifteen, transportation of pupils; sixteen, payments to other schools, pensions, rent, etc.; and column seventeen gives the total number of dollars reported in columns two to sixteen inclusive. The next two columns, population and A.D.A. (average daily attendance) were taken from pages 65 to 81 of the report to which we have already referred. The last vertical column gives the pupil cost determined by dividing the total spent for school purposes (column 17) by the average daily attendance. Naturally, where the data were lacking for the attendance it was impossible to compute the cost per pupil. Table I should be read as follows: city number one spent \$2500 for the superintendent's office, \$1675 for supervision, \$17403 for teachers' salaries, \$1610 for text books, \$2323 for stationery, supplies, etc. \$826 wages of janitors and other employees, (1) indicates that the cost of fuel is included in column eleven, \$1100 water, light, power, etc., and \$1396 for maintenance, making a total of \$28773. This city has a population of 7,061 an average daily attendance in elementary and secondary schools of 871 and spends \$42.00 for each pupil. Other cities may be read in a similar manner.

Table I

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
 3. Superintendent's office.
 4. Salaries and expenses of supervisors.
 5. Salaries and expenses of principals.
 6. Salaries of teachers.
 7. Textbooks.
 8. Stationery, supplies, and other instruction expenses.
 9. Wages of janitors and other employees.
 10. Fuel.
 11. Water, light, power, janitors' supplies ,etc.
 12. Maintenance-repairs, replacement of equipment, etc.
 13. Libraries.
 14. Promotion of health.
 15. Transportation of pupils.
 16. Payments to others schools, pensions, rent, etc.
 17. Total of 2 to 16 inclusive.
- Pop. Population.
- A.D.A. Average daily attendance in elementary and secondary
schools.
- Pupil Cost. Item 17 divided by A.D.A.

Table I

1(a)
Original Data.

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
1-		2500	1675		17403	1610	2323	828	(1)	1100
2-			1320		8215		188	409	(1)	320
3-		1800			12760		2399	675	80	
4-	195	1813			13148		228	645	440	561
5-		1800			10925		106	393	205	258
6-	463	2100		1225	17186			1254	(1)	505
7-	1008	2500			38625	694	1433	3920	349	1186
8-		840		3900	30200	450	7001		1980	125
9-			1800		33070		2156	7304	800	400
10-					72800	1848		5195	594	11779
11-		2820		2000	39500	650		2910	780	830
12-	300	3000		5000	84128		33308	11241		
13-	596	4655	1856	2403	49057	384	2315	4271	1162	4711
14-	1340	2635	2970	2350	54272		2992	6434	3348	2182
15-	578	3550	3045		27180		543	2682	1929	1256
16-	1944	1761	(1)	(1)	77309		701	3945	6522	971
17-	500	3130	4820		45596	622	1531	3901	2793	1244
18-	2517	3873	5220		42352	1642	1013	4905	1031	3309
19-		3247	3850	5733	38111		3145	3788	2845	1314
20-	100	2035			19382		1489	2301	1608	
21-		2080	1260		22642		1357	2474	1216	1122
22-	70	1789	472		28904	1742	878	2715	2115	430
23-		1841	850		25904	770	1192	2369	(2)	2150
24-	368	1094			17070	692	1116	1664	1596	
25-	650	1513			25029	987	840	2273	1483	401

Table I

1(b)
Original Data.

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1396					28733	7016	671	\$42.80
597					11049	6689	580	19.05
496				292	18502	7611		
1066					18103	6118	961	18.83
770					14457	5854	484	29.86
2866					25619	8407	989	25.89
894	341	240	440	131	51061	5021	1096	46.59
1375					36801	5430		
800	2700				44730	5791	1114	40.24
4545			733		97092	6802	1944	49.94
1230					50520	5934	763	66.21
	3841				140816	8429	1834	76.77
2566	564	291	86	148	75065	7817	1662	45.22
2606				360	81489	9639	1811	44.90
1277	142	404	350	225	42357	5162	805	52.65
8934			128		108325	6206		
4225				1055	69397	8210	1663	41.73
4061				2308	72231	7751	1590	45.42
4702					63715	7508	1139	55.93
			1336		28238	6047	1065	26.51
1058		193	239	1135	34830	8992	1061	33.13
2391	246	206	1439	180	41557	8138	1623	25.60
1677	230	65	2105	2636	41000	9719	1371	29.90
811			2889	3941	31239	6134	1245	27.74
2179	102		3747	558	39832	6545	1215	33.05

2(a)

<u>Cities</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
26-	242	1280	450		19006	718	1203	1768	(2)	1984
27-	186	1209		900	13102	522	105	800	(2)	2263
28-	75	1664			17807	1025	573	1350	1210	27
29-		710		1550	11500	400	350	900	1250	250
30-	248	265	458	1850	13230	758	946	1689	4795	488
31-	24	1700	1920		27565		1856	2148	1854	408
32-	350		1200	1200	14000	1200	300	1020	1600	200
33-	387	2261	2558	3700	23041	2141	184	2514	(2)	3029
34-	136	2181	915	800	20810	966	489	1914	1712	725
35-	233	1000		1200	15461	1143	718	1225	1572	129
36-	966	2155	1284	2750	17465	218	719	1897	1685	196
37-	81				17955		378	360	254	
38-	292	2400		2300	15961		482	564	695	108
39-		2000			16298			1146		324
40-	100	2000	600	1500	10000			450	350	
41-	250	1800			14500	842	473	700	208	500
42-	50	1650			13366			840	300	456
43-		1800			22021		1793	578	360	350
44-	100	1675			13424			720	487	276
45-	300	2100		2000	12200		200	600	500	400
46-	150	1850			19800			655	(2)	654
47-	274	2291			21694	95	590	2165	998	760
48-	300	2244		1300	30379		1089	4478		3798
49-	200	2425	1600		30000	200	600			
50-		170		1800	12800		250	1125		
51-	547	2391	770		20017	96	900	2615	781	437
52-	100	2030			16931		2085	2250	(2)	1014

2(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
2200			900	150	29901	6564	771	\$38.80
1380	155		797		21410	5010		
1584	180		473	274	26242	6710	1010	26.00
325	100	120	750		18205	5021	814	22.40
645		16		343	25831	7280	689	37.50
5009	240		539	1392	44655	6516	1393	32.05
225	15	10	1700	950	23970	5233		
1247	401		3320	175	44958	9154	1454	30.90
534			1474	4	32660	5712	1177	27.75
883	104	10	1052	273	25003	4259	678	36.90
1701	272	871	1264	217	33660	8679	907	37.18
378				216	19622	8190		
1422				181	24405	8063		
					19768	5795	1258	15.70
200					15200	6483	662	23.00
600	100				19933	5795	1100	18.12
					16662	5925	1365	12.20
530	55			183	27670	5587	1173	23.60
317					16999	5949	848	20.50
100					18400	5548	1038	17.75
967					24076	7656		
2462				30	31359	6107	1182	26.55
3791					47339	7253	1198	39.55
		300			35325	5841	1300	27.42
					16145	5411		
3575	191	112		285	32717	9680	1568	24.50
4732					29142	5884	816	35.70

3(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
53-	80	88		1880	21874		2031	2747	1417	277
54-	864	1982	2400	2680	14096		1047	2078	1878	1369
55-	114	1880			14714			2768		940
56-	1888	2224		4072	21974	1447		2908	(C)	2821
57-	300	2100	800		17108	300	250	2000	1600	800
58-	1000	2427	4663	2051	51811		4544	7058	(C)	5119
59-		3000			26116	516	1230	5620	4619	2459
60-	150	1200			19017		550	1128	850	180
61-	150	2278			12890	75	478	1690	400	756
62-		1880	497		19808		1006	2272	(C)	897
63-	543	2078		4960	22994	435		5600	2226	2722
64-	996	2535		1600	26513	59	934	2728	577	6948
65-	150	2140		2000	18000		200	2580	2000	
66-	119	2080			20370	142	500	1898	(C)	746
67-	150	1800			16901		802	1002	615	9252
68-	251	1971			12807	28		1327	1657	
69-	350	2700			25022	38		4808	2706	
70-	300	1970	1688		12680	60	1467	6175	822	1014
71-	1035	2270			20452		1228	2728	1601	120
72-		1900		1700	22904	2927		4145	1496	2000
73-	319	1850			12890		422	2622	622	282
74-	150	1600	2250		16118	100	548	2126	656	222
75-	600	1675	1440		12650	80	1000	1220	1022	1775
76-	100	1530			9222		987	1112	(1)	1162
77-	1316	2640		1850	22217		1400	2421	2202	620
78-	170	1982	720		12889	117	208	1445	922	609
79-	240	2200			25492					

3(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>	
3393				33337	5165	1065	\$30.32	
4643	386	37	157	34693	8102	1164	29.80	
	40			22820	6594			
3324	142	50	190	53505	9903	1607	33.30	
1200	100			26450	7227	909	29.12	
1530				81231	9307			
6676				61037	5282	1069	57.35	
650			200	24612	5971	995	24.78	
1189		80		19355	5946	751	25.80	
1217			180	27132	7093	1548	17.52	
893		300		52493	8033	1898	27.68	
6945	102		13	57300	9128	1575	36.42	
1000	100		300	25440	6934			
4359	91	89	88	30183	8007	1580	19.10	
			100	32132	7485	1280	25.12	
2062	51	186	2214	22391	5011	827	27.45	
1545				38238	9535	1028	37.18	
2140		70		28313	6055	935	30.27	
3347	450			43356	7664	1438	39.60	
669				49862	9897	1900	26.23	
1284	85			21514	7984	629	34.20	
2690		22		26897	6090	703	38.25	
1611	50			23744		631		
2723		129		17600	5446	590	29.82	
3691	378		289	300	51535	8245	1752	29.45
302			307	20772	5096	750	27.60	
		225		38158	8716	1834	20.92	

4(a)

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
80-	232	3192	1710	2247	33708	60	309	2252	1096	371
81-	300	2800	1440	1500	4520			(1)	(1)	2463
82-	995	2064	1519	1100	23339		714	2746	1034	1285
83-	550	2900	8600	1460	31516		3938	4743	1990	825
84-	350	1497	1760		29925	454	611	2703	1391	702
85-	1469	2679		2400	38779		4370	4124	1995	1406
86-	672	3306	3450	1300	34062	176	1115	2675	3697	475
87-	400	2100		5212	35446				408	696
88-	1093	2250			23149		423	2775	972	451
89-	150	2000	2353		24056			2137	(1)	2065
90-	1196	1800	922	3561	21306	127	426	2204	1147	789
91-	400	2070	720	4125	20854	150	166	1970	960	188
92-	300	2400			44190		300	2890		1200
93-	180	1725			21639		5	2160	2200	
94-	75	1750			20944		350	1710	1200	2612
95-	300	1800		1080	20162	193	1063	1879	1096	259
96-	300	1300		5010	28529		2354	2395	1490	
97-	350	2200			32131			2595	812	1008
98-	400	2000	1800	1300	27527		75	2925	2000	600
99-	1156	2449	5850	2000	24004	1017	3704	5959	2412	2097
100-		2125			22000	100	400	3900	3000	1000
101-		1600		1820	23799		1043	2745	1245	1560
102-	240	2050		1000	30058	30	1453	3560	2971	5032
103-	412	180			26104	1565	670	3530	1465	415
104-		2100	4845		21500			2745	1500	900
105-	50	2535		1200	25332	1942	859		(1)	5771
106-	297	1904			20165		37	2745	2028	1077

4(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1580		164		105	47026	8838	1909	\$24.63
	360				20183	9340	1684	11.97
1039	166	43		108	36152	6269	1345	26.90
2783					60381	8913	1409	42.80
3446	21	52		5	43217	7738	1136	38.10
4596		386		170	62456	9371	1648	37.90
2020	2460				55398	8634	1712	32.39
1116					45462	8514	1368	33.20
984	114	329			32500	5420	878	37.00
201	400				33362	5474	1041	32.04
856		222		6	34462	6934	1010	34.12
1712	150	91			33456	5563	1076	31.10
					51260	9446	1583	32.45
2754	30	100		37	30830	5073		
2609	100			156	31412	5130		
2000	250	194			30265	6305	1048	29.45
2049		524		54	45495	6987	997	45.60
1500					40596	8687	1490	27.25
800					39472	7854	1264	31.21
2087	4806			25	55375	6587	833	66.40
1000	100	150		3000	36675	5012		
2283				1854	37646	6936	1513	24.85
	75	550			47017	5892	1108	42.40
1545	147			4370	40403	6924		
2500	2100	4845			36090	8900	1006	35.87
	394				38082	5036	1186	32.10
1699					29952	6028		

5(a)

<u>Cities</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
107-		2005		1350	36211	61	1597	4007	2083	1240
108-	795	1950		1300	29084		2908	3160	1475	10328
109-	144	3118	765	1300	32397		1835	2490	1828	500
110-	900	2270			39145	150	626	3872	2292	1676
111-	164	1574	1500	20571	19071	50	25	1935	851	200
112-	500	2556			32694	125	1724	3392	1786	498
113-	104	2076		3313	18381		1721	2737	1158	929
114-		80	2800	3420	4159	15	125	310		
115-		2234	675	4660	26264	14	4349	1992	1709	204
116-		1650	1575		27406		425	5116	1834	190
117-			(2)	(2)	55997		2634	(2)	2145	631
118-		1900			16663			3180	880	521
119-	600	1908	900	1500	25968		75	3252	1341	7094
120-	100	2760	810	1800	26483		1533	2385	1637	900
121-	200	2750			14927			2340		650
122-	550	2400		3450	21450		350	1120	659	100
123-		1200		1200	8000			700	500	200
124-	375	1700			15151	50	100	1720	400	327
125-	25	1920		4810	23085			1900		
126-	60	1780			2790			1125	500	100
127-	250	2050	775	3995	14995	150	100	1943	700	425
128-	100	2700		1064	18367		708	1552	592	885
129-		2450	675		13077			950	650	625
130-	250	2300		2200	17157		400	1675	1140	
131-		550			17079	1348		1311	2205	
132-	250	850			16568	1191	345	1051	1650	97
133-		400			16650	700	500	1350	1920	100

5(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
2487	211				51252	9466	2034	\$25.20
1865					52845	7508	1531	33.45
5104	207			1267	50955	9272	1910	26.65
1000					51931	9058	1599	32.50
6850	100	200			53091	6096		
4503	64	88			47930	9032	1780	26.90
1980				656	33055	5598	1146	28.85
	140	100		240	11389	7862	1444	78.60
2801				290	45192	7650	1462	30.90
2850	461				41507	5960	1290	32.20
4348	239			756	66650	9688	1794	37.15
3863	399	56			27462	7034	944	29.00
2770	697				46105	6700	1501	30.71
2020					40428	8688	1525	26.51
175					21042	6683		
300	100				30479	9173	1246	24.45
500	100	100			12500	5420	402	31.04
2035					21858	6979	886	24.67
5801					37541	9419		
2093					8448	5916		
1900	200	250			27633	6141	859	32.16
2034	56				28056	5859	862	32.50
385					18812	5340		
5088				3433	33643	7156	1089	30.70
1787		100	805		25185	5667	1034	24.50
1050			210		23262	6621	733	31.73
880			535		23035	6116	1099	20.95

6(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
134-		658	550		18294	1188	1739	1598	2143	1138
135-	50	1600	500	1600	16824	700	1000	1698	2742	93
136-		2100	2450	1300	17626	1000	2859	2688	1300	
137-	125	2119	625	1500	21705	1213	1652	1973	3017	1174
138-		1100			17620	506	669	1448	1770	61
139-	75	790	2250	600	24590		22397	2231	2335	
140-	650	1842	1900		16435	794		1452	1706	614
141-	108	720	1700	5400	22829	1344	720	3053	3659	
142-	300	1150	900		23525	1988		2584	1086	1394
143-	611	1852		1800	16450	327	1975	2897	1980	601
144-	147	1816			16747	832	771	1292	1837	654
145-	600	2074	1775		27344	1465	1647	2224	2399	652
146-		2000	928		24257	1256	1617	3338	3438	2289
147-	40	2222	1275	5580	22513	1217	1254	2914	2052	464
148-					17183			1095		
149-	178	2225	1500		35458	1464	1530	4619	2679	535
150-		1125	900	4800	17334	1200	618	1834	1445	1273
151-	388	1656			19391	1012	1699	2448	751	343
152-		2423	1985	4200	30562	1920	6326	2906	3145	1020
153-	1116	2517	1026		51402	2087	2221	4271	2928	920
154-	546	2233	4134		24097	1986	2783	3059	3064	403
155-	117	2368	940	2500	22833	1108	2094	2437	1697	388
156-	1665		1340	4750	19731	408	2001	4840	1678	3677
157-	183	1493	850	1300	18651	1306	1523	3126	2983	1454
158-	410	1468	1046	4055	8963	547	496	2021	1744	351
159-	122	1629			18747	991	961	1970	2371	580
160-	525	820			18979		3071	2117	2372	244

8(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
4647			668	22	32645	5311	955	\$34.18
2000			1142		29949	5179	1101	27.20
500			530		32353	8174	1131	28.60
1282			865		38226	6777	1337	28.59
835			2002		26011	6583	657	39.60
2208		15	2826		40317	9049	1167	34.55
1527		200	2426		29545	5341	812	36.35
500		250		100	40385	7471	1371	29.45
956			1200		35083	5455		
2971		279	1184	171	33098	9894	782	42.30
1581		198	1140	204	29019	5112	835	32.38
2982		190	2178	900	46430	7301	1112	41.75
943		250	2633		42949	8536	1379	31.15
838		102	50	69	40590	5542	1058	38.45
				4224	22522	5648	948	23.75
4008	60		1700	1288	57244	8066	1573	36.45
993		100	2345	1250	35217	7688		
1408		303	2161	1262	32782	5010	866	37.82
2157		621	3972	92	61327	6421	1062	57.78
3528		1170	700	677	74563	9284	1888	39.50
3401		125	2246	659	48636	8524	1174	41.45
930	56	306	3127	83	40940	5139		
1438		204	1918		43650	5122		
2917		250	3088		39124	5641		
1183	13	100	3685		26072	5705	742	35.17
1503	108	209	1079	38	30288	6743	1016	29.81
2970		300	766	877	32941	5183	969	34.00

7(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
161-		2050			28191	1199	1171	2150	1721	300
162-	150	2200	1500	5178	21517	1034	1384	2363	2438	125
163-	970	3225		5854	52562	812	3925	7648	3971	2463
164-	186	2000	1700	1600	20763	1157	1253	2203	4021	1026
165-	150	2600	1200	1900	26087	2000	2137	4380	3247	2250
166-	498	2656	1775	5932	22941	1479	1544	3124	3861	381
167-	724	2448	53	6814	30202	1630	2036	3760	2700	760
168-	61	2410	1100		27912	1478	853	3574	4597	1200
169-		2503	1180	1553	22656	1604	2042	2386	3082	850
170-	120	1600	650		24237	779	1280	2825	1962	995
171-	138	2312	1936	6091	26218	1974	2398	4238	5187	531
172-	142	1433		2700	21829	1255	1470	2632	2913	1147
173-	400	745			14830	505	1090	1874	1647	167
174-	618	1075	2441	5460	25849	1367	1758	3570	3223	
175-		2000	1100		22102	820	1185	3497	3069	860
176-	403	2651	1504	4100	30667	1381	1998	4869	2467	703
177-	87	676	420		13224	694	535	1200	1350	453
178-	822	2503	2925	2300	33365	2247	1925	4476	4176	404
179-	158	2341	2350		26653	975	1613	3612	4135	499
180-	45	1428			21985	987	1344	3796	2280	483
181-	1506	2974	1320	4092	44715	1863	2786	5236	4298	540
182-	150	2000			21895		402	1940	1695	732
183-	250	2200		1200	33222	3673	3651	3886	2560	550
184-	327	2096			23792	21	1518	2272	1828	1935
185-		2250			39260	715	1884	5484	4541	2366
186-	670	1650	1275		19986	1090	1148	3232	1467	920
187-	200	1800	2750	1000	19902		3008	2053	1245	887

7(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1126		200	128	485	38721	7338	1233	\$31.25
1074		300	2177	766	42206	8214	1313	32.33
2264	46	872	2270	395	87277	7924	1296	67.35
1994		271	3647	423	42271	6866	1104	38.28
2891		200	1700	465	51207	9866	1802	28.44
2194		258	962	1481	49066	5026	1080	48.60
3095		202	402	339	55165	9562	1512	36.43
3128		300	1190	39	47842	8807	1573	32.05
2172		200	2374	74	42676	8610	1471	29.05
1495	295	9		296	36543	6928	1129	32.32
1683	100	75	510	779	54170	8047	1641	32.98
561	8	150	200	1611	38051	7090	1022	37.26
1823		100	293		23474	6316	849	27.65
1124	6	200	600	1714	49005	6204	465	105.40
2865		595	1085	169	39347	8774		
1929			1266	821	54759	5413	904	60.65
682			2369	242	21932	5446	614	35.72
4577	61	312	600		60693	9224	1993	30.42
681		256		1218	43491	7292	1314	33.12
1371		52	2103	443	36317	5678	967	37.55
6359	83	1058	654	247	77731	9309	1677	46.35
5274	98	609			34795	5833	1193	29.18
4939	211				56342	9185	1768	31.90
1431	188			144	35552	5218	1155	30.78
3219	236			120	60075	8375	1692	35.45
5328	2041	5345	1539		45691	6859	969	47.20
1831	200			168	35044	5945	1026	34.18

8(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
188-	1119	22850	2000	1550	28333		2169	3200	3748	363
189-	1750				22220		1669	2505	3641	
190-	2848	3400	6600	1800	42012	993	3027	6546	4921	21516
191-	275	155			23759		3008	2813	2252	505
192-	1048	3949	3185		48231	105	1688	9994	6983	2150
193-	1113	2296	3326	4854	27125	80	1521	3367	2483	1372
194-	50	2100			20624		786	2790	1396	1681
195-	300	2250	3125	1200	20349	600	1000	3180	2203	700
196-	674	2450	1100	1350	31455	276	1621	4856	2808	983
197-	250	2370	4300		34100	800	300	3000	1400	1500
198-	150	113	1973	2000	17894			1760	(1)	1220
199-	180	1850			18912	53	1471	2181	1380	300
200-	150	2000	1100	900	21450	1481	1000	2785	2379	623
201-	750	2510	3365	1600	20709	137	631	2528	1702	1588
202-	400	3380	2160	1200	28000	1700	1275		5130	3780
203-	600	2523	1530	1755	17412	1097	1660	2880	1800	2001
204-		4000	3550		34700	1882	7266	8473	4459	
205-	250	2571			25036	726	1364	3420	2625	1750
206-	500	2900	(2)	(2)	34141	833	3560	4120	3604	2000
207-	1560	3550	8250	2000	51621	2708	6186	12630	6646	3559
208-	5143	11109	3200	5600	93686	3667	7158	17187	17570	750
209-	255	2272		1100	12950	100	100	1590	1500	200
210-	461	2766	1480	2805	27012	862	2650	2768	1670	1195
211-	550	2435	1575	1300	28198	1093	3555	2605	2225	1322
212-		2276			21882	208		726	498	1041
213-		1500	1080		10270			720		280
214-		2250	810	5256	15364	630	375	1235	478	

8(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
3031	243			721	49327	8981	1445	\$34.19
1425	263			582	34055	5001	968	35.13
3347	5020	1200	2627		105849	5113	1618	65.42
2894	165	70		359	36256	5030	886	40.98
4038	4184	450	382		86387	9216	2321	37.23
3916				566	52019	9132	1483	35.15
852	375				30744	6893	1951	15.75
1500	500	250			37157	7707	1052	35.38
2376	110				50059	8460	1423	35.17
3000	200	100			61320	9639	1783	28.85
554	364			2875	28003	5936	908	30.46
974	119			726	28146	5072	850	33.97
305	1528				35701	8287	911	39.23
1691	1085	201		50	38547	6230	911	42.35
2010	700		165		49900	6192	1370	36.43
775	81		450		34564	5009	1020	33.88
14615	993	705	1900	640	83123	7684		
3724	500		540	2287	44793	7031	1179	37.98
2900	250				54808	7559	1293	42.45
6728	1274	1833	2720	7	111272	7036	1650	67.48
17450	750	1910	5109	52	192473	8832	2157	89.48
750	100				20917	5648	710	29.40
1709		16	432	450	46277	5658	450	10.29
2346	187				47391	9048	1279	37.05
108					26739	8988		
1382	200				15432	5020		
1139	750	50			28337	9610		

9(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
215-		2250	1350	1200	17700			800	150	75
216-	452	2866	1815		36395		451	1736	550	353
217-		2500	1350		15000		100	900	300	
218-	240	2400	2400	2175	14700		700	900	300	400
219-	199	2147		1175	18123	1295	1421	2467	593	994
220-	900	2616	1395	1500	17866	3	1223	2910	1211	611
221-	740	1815	796		13790	5	335	1757	747	269
222-	139	1350	630		13162			1021	647	351
223-	234	2250		5775	34535	300	200	6928	2676	1113
224-	150	1900	500		17135	125	1500	1943	975	2500
225-	250	1600			16790	72		2350	1005	1630
226-	150	2100			20655			2280	1492	2071
227-	200	1800			24492	50	100	1515	1172	492
228-	350	2200	630		26370	1400	2500	2485	3000	355
229-	300	2500		2800	35386		6669	3764	2400	2547
230-	750	2315	3160	2065	31962	1400	3312	4253	2093	
231-	150	1950			21200	2000	1500	3000	1500	300
232-	100			4000	20634		1980	1800	1700	
233-	300	3825	1710		31427	1686	2420	3903	2043	
234-	3199	450	8887	6640	32962	250	3540	5688	3254	1602
235-	250	1828	810	4825	20032		1423	4470	1926	4429
236-		1800	1440		18929	1669	1861	2835	1723	216
237-	304	2610	1870	1500	20459	1907	1349	1443	1518	949
238-		1220	1283		13644	592	765	1458	1795	
239-	129	1059	360		9123	257	254	777	1045	141
240-		1662	855		12460	817	600	1017	1917	120
241-	359	1470	1032		14392	765	536	1556	1722	267

9(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
800					24825	6386	785	\$30.60
664	289			200	45771	8465	2188	20.90
500					20650	6237	2350	87.80
1000		600			25815	6796	1424	18.12
1531	139				30093	8475		
6324	390			246	47195	9483	1738	27.25
685	263				21202	5112	1009	21.01
884	167			428	18779	5228		
2923	1151			4378	62463	9859	2068	30.15
3000	200				29928	6347	1105	27.05
3132					26829	5242	939	28.59
1677	1539				31964	5939	1176	27.10
1896					32720	7176	1393	23.50
4375	175				43840	6916		
6461	79				62906	7080		
3960					55270	9356	1752	31.59
1000					32600	5014	971	33.60
3140	1900				35254	5294	1127	31.15
1360				2679	51253	8718	1735	29.58
3149		371		129	69221	9338		
4752		200	360	986	46291	6202		
1215				4	31692	6025		
3242				220	37372	6235	965	38.70
2391		180	3475		26803	7529	993	27.00
1125			252	3540	18062	5123	634	28.42
374		100	1684	906	22512	6132		
2159	23		308	1936	26552	5718	628	42.20

10 (a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
242-		1383		1400	18241	855	741	2465	1475	344
243-		1200			14250	630	951	1850	1228	246
244-	476	3351			32731	1087	1820	2805	1990	889
245-	2058	4079	2850	6600	61284	1392	3754	7194	3141	2516
246-	423	4184			35246	1489	1204	2158	611	1085
247-	1168	3260			42036	1975	2891	4182	2230	1124
248-					27276	807	6152	4087	1720	911
249-	1033	3315			47737	3291	4761	4256	1677	633
250-	1511	4083	1500		40198	2367	1280	5188	2393	1371
251-	2235		5750	4226	40246	1722	3434	5018	2443	961
252-	1014	3047	2700	7650	47986	2176	2789	5900	2776	1554
253-		500	1800		22144	2076	16065	2792	1415	1650
254-	401	270	2760	1300	27199	1003	1913	2395	1802	385
255-	1381	641			17821	1973	298	1692	1583	346
256-	2830	3850	900	6400	44227	1235	2927	7022	3403	2973
257-	547	1916			40083	1807	2090	3675	2482	976
258-	903	3500	4175	4850	41093	1301	2455	4868	2114	3813
259-		2100			19485		25	1515	4008	1343
260-	358	3420	3254		24918	116	1521	2850	3615	782
261-	250	2500	725	1450	14800		500	1620	2000	350
262-		1400	1500		12500		750	1150	1100	150
263-		200			19875		1555	1400		3644
264-	150	1900			16119	723	480	2314	1723	497
265-	279	2120		1200	21257	48	1210	2450	(2)	3487
266-	617	2020	1402	3488	17859		456	2035		1856
267-		2000	1330	1600	25257	253	1374	1842	5175	
268-		3420		4700	30547	830	1064	4021	3618	277

10 (b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1847			4642	118	33541	8868	1221	\$27.48
632			704		21691	6704	525	41.35
1794		790			47733	7468		
3417	127	354	325	816	99907	9924	1705	58.60
1867		225	12	732	49236	6117		
6785	437	973		701	67762	6009		
4939	467				46359	5136	726	63.70
2084		407		*	69194	9337	1436	48.20
3130	100	600		109	63830	7398		
3710	161	804	10	879	71599	5416	1187	60.35
1390	133	505		838	80457	7045	1530	52.50
1650	30				50122	6614		
3011	25	256			42720	5060	1124	38.10
929		273		143	26830	7007		
7111	20	1053	36	1096	85103	6014	1267	67.20
3463	210	384	1374	1690	60677	5282	2260	26.85
4225	300	612	57		74286	6420		
11704	191	200			40571	5016	820	49.40
3017	564	270			44865	7217		
500	200				24895	5296	633	39.30
4400	140				19090	5285	691	27.65
1588	9	300			28571	5669	774	36.85
1059	700				25665	5532	438	58.40
3319	40	480		1088	36978	5189		
1798	95			949	32575	6588	1177	37.70
2061	1138	600		454	43084	6467	1232	34.95
2952	270	250			51945	5699	955	54.40

11(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
269-	175	1856			23325	232	713	1645	2482	1075
270-		1800		1100	20283		468	2125	(2)	1575
271-	334	2032		1287	19655		397	1808	1600	2601
272-	400	2650			17731	461	1257	1621	1086	158
273-		2100	350	3100	20614	62	257	1719	(2)	5697
274-		1800		6250	28325		986	3462	2800	7643
275-		2372		6475	19382	760	277	2218	(2)	2684
276-	800	2000		5569	30913	1111	1170		3360	2647
277-		2520		1600	24978	46	465	1544	(2)	2865
278-		2186	1075		14850		1057	2087		1201
279-		3770	1100	3900	22954	673	5938	5938	2309	2048
280-		2975			27888	1304	1500	1500	700	793
281-	150	3025	1300	1900	28042	845	1467	1467	2110	500
282-	405	1496			13870			632	304	335
283-	250	1800		1875	12892			750	600	325
284-		1600	480		15396			726	537	822
285-		1955		1745	16339		703	1087	914	52
286-	140	2400			20527		100	1040	900	82
287-	438	1800			20801		492	(1)	(1)	1367
288-	298	1500		637	13500			675	640	177
289-		1500			16594					
290-	138	1450		800	15176		501	1016	886	306
291-	150	2113			12500	50	200	1220	(1)	900
292-	2300				34416	1500	500	6300	2800	800
293-		1890		860	21665	225		3500		
294-		1400			17733			2000	783	800
295-	350	1790			17665					

11(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
3338	300	250			35391	6634	1378	\$25.68
1264	66				28681	5683	616	46.40
3404	156	900			34174	6227	855	39.90
402	285	200			26251	5421	654	40.15
1205	1077				36181	7422	1270	28.28
941	250	500			52957	8317	1254	41.40
2136	289	300			36893	9491	1259	29.35
2029	3200				52799	9564	1485	35.60
910	443				35371	5792	1056	33.45
1938	4	500			24898	6588	681	36.59
2623	130	371		160	48846	5139	1009	48.75
1682				2632	41499	5600	657	63.02
3637	595	300		70	48023	8290	1252	38.40
1323					18368	8715	1403	13.05
735					19217	8412	1298	14.85
1492					21053	5759	1346	15.60
1882	320				24897	6107	1465	17.00
3935					29124	9525	1631	17.91
3706				1064	29670	9961	1303	22.85
1132					18559	7153	1266	14.67
					18094	6211		
1085					21331	6717	1221	17.45
300	1050				18505	5463	1036	17.87
2400					51016	9410	1773	28.80
	1500			290	29930	8238	795	37.59
2586	1416				26718	5209		
3000					22805	5222		

12(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
296-	764	2098			24258	405	421	2580	1156	529
297-	54	2280			23353			2000	1400	45
298-		1926		2973	21883		200	3600	1187	791
299-	125	800	9304	3900	29223	200	70	2025	1325	450
300-		2250	900		23250	1090	600	3400	1250	600
301-	597	2600			28325	355	937	2773	2497	1224
302-		1600		1700	14475	100	125	2330	1100	100
303-	1650	5125			67544			(1)	(1)	32501
304-	500	2900	3780		26730	1400	300	5000	2000	400
305-	112	1782	450		15863	35	405	1337	457	206
306-	250	1980		1100	27827	390	600	5280	2750	2000
307-		2500	1575		32183			3500		
308-		2025			16430			2265	760	700
309-	650	3075	2895	1600	25317	3029	1075	3696	1298	4589
310-			2010		26394					
311-		2000	950		16892					
312-	200	2300	630	1100	16870	75	100	1200	600	300
313-	450	2220		1300	24000	100	300	3000	4000	1000
314-	500	2375			25672	250	200	2340	1200	1000
315-	200	2000			19267		545	2292	1200	603
316-		2000	1125		15128			2100	900	600
317-	150	2750			26386	75	250	2727	1500	400
318-	350	2192		1400	19427	1434	421	3078	928	217
319-	560	2450	750	1200	21363	1826	927	2745	1963	568
320-	1268	2588			20041	1200	885	2144	1014	
321-	4240	2186	585	1200	17175	660	412	1950	1800	709
322-	350	1635			15765	594	1092	2336	1049	79

12(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
458	58				32727	8122	1135	\$29.85
950					30082	6744	1051	28.57
6993					39553	8319	1329	29.80
	400	125			47747	9603		
1300					34940	7327	1026	34.10
1130	31			99	40568	9076	1560	28.00
1500	50	10			22990	5038	658	34.87
					106820	9179	2047	52.00
800					43810	9597	1488	29.50
93	1053		694	806	23293	5560	820	28.39
2000	2000	300			46477	6237	1115	41.60
	450				40208	9133	1975	20.39
		100			22280	6082	1361	16.34
	1272			161	48657	8361	1461	33.30
					28314	7858	1117	25.45
6648					26490	5310	817	32.42
1000	200				24575	5732	1012	24.20
2000	2000				40570	6607	1102	36.85
1200				360	39557	6122	1173	33.70
1630					27737	7739	915	30.30
2000					23853	5349	854	27.92
2500		25			36763	7277	1326	27.70
580				300	30327	7769	1325	22.85
676	1800				36828	6136	1320	27.90
2640			975		32775	5205		
2344		600		336	34197	7194		
983					23883	6855	981	29.45

13(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
323-	200	1690	600	1200	15363	1022	401	1376	909	281
324-	301	7	1950	2250	31528	1600	2347	4311	1122	125
325-	1172	1365			18353	1878	2754	1373	1318	471
326-	948	155		1200	13890	1127	1012	2075	764	459
327-	1015	135		1800	19857	1810	2179	1326	1220	168
328-	222	1100			15083	646	1480	2051	1283	789
329-	1688	104	1450	1980	16746	882	1585	2130	578	994
330-	270		300		15955	816	2301	1688	1465	1269
331-	670	2110			32192	2210	2212	4175	1225	854
332-		2950	1400	2100	19589	1000	2000	2000	800	360
333-	1200	1660			12460	2800	1265	1860	860	257
334-	300	1531			16147	756	707	1800	769	316
335-	425	2172			21989	1160	1137	3120	1062	1104
336-	400	1459			16876	719	1682	1754	2216	451
337-		1400			18993	1176	1638	1602	1321	
338-	450	1600			19289	1385	4596	1680	808	382
339-		2025			2340	1219	2125	2608	1393	477
340-	300	3320	1215	1320	25048	2359	2988	2534	1110	
341-	4015			1800	18004	1162	1012	3118	974	736
342-	1025	180			11098	477	259	1063	381	1006
343-	1100	2085			18040	655	1023	3120	668	400
344-	150	405	1845	2000	12690	645	593	1800	583	332
345-	350	20		1320	8905	618	754	1280	1100	48
346-		1515		2015	13456	535	677	996	733	2215
347-	300	1680	895	900	18572	1031	1216	2844	577	2628
348-	170	2092			19911	1435	2430	3514	1419	1522
349-	250	1709	675		18037	780	1416	1732	824	485

13(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1022					24064	5369	987	\$24.32
1672		190			47043	6323	1007	46.71
2509					31193	5357	977	31.92
2362			57	412	24466	5745	939	26.10
1237					30547	7413	1364	22.34
1382		95			24142	9256	902	26.70
1712		12	47	2496	32404	6117	753	43.00
634	85	1180			24947	5250	698	35.65
6649					52297	9615		
3000	500	300			35999	6951	1411	25.50
450	120	450			23282	5154		
572	500	150			23551	7480	778	30.15
1467					33636	5252	943	35.65
2078	336				27971	5991	1048	26.65
325				5267	31722	7517	1089	29.16
2115		100			32405	6305	1061	30.60
2355		150		900	15592	9331		
2838	120	40			43192	8174	1688	25.62
3135		230		282	34844	7487	1645	21.20
1297				282	17059	5046	720	23.70
5000					32091	8407		
1241		50		1393	23726	5830	640	37.05
120	100			4336	18931	5749		
1990	200				24372	6197	1390	17.50
693				12466	43802	5540	876	50.00
3820					36313	5909	1137	31.97
1558				39	27505	7057		

14(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
350-	200	1735	645		16884	1080	760	1870	497	28
351-	250	2600			23695	1274	2254	3450	1025	2317
352-		12		1300	12778	420	1000	1230	1239	
353-		11869		3420	17134	2203	1609	3169	1402	217
354-	240	2025	2810	1200	20748	1063	870	3284	2012	5853
355-	326	2045		1935	15477	1271	1462	3148	1446	1079
356-	620	1929	1100		16582	1296	1600	1792	1429	587
357-	2374	1900	1815	2800	19861	1929	2395	4050	1823	469
358-	360	2434	3530	2000	25411		1444	3262	(1)	2205
359-	275	180		1260	12150	1164	1025	1242	1110	139
360-	567	1704			20060	1516	1439	1700	614	252
361-	84	1935		630	18697	2850	3469	2240	1020	480
362-		48			10885		1188	1052	463	
363-	550	1280			12395	769	489	1428	757	1289
364-		443			13728	911	1038	2190	620	100
365-	100	2002			21876	3507	5901	4478	1011	250
366-	286	1985			16735	877	1174	2260	601	946
367-	130	2092			25812	790	1233	3084	777	1955
368-	350	2115			19064	498	1177	1500	850	543
369-	1584	2785			19061	828	681	1980	368	650
370-	1157	2610	1425	855	28248	1213	1914	3316	1572	687
371-	2411	2967	1125		27290	1642	1748	2499	689	2691
372-		1700			21181	3255	186	2527	1763	
373-	2585	2250			19575	1250	1583	2850	1997	
374-	650	2217	936		29294	2035	1938	2827	1061	389
375-	300				20370	454	1319	3058	1258	1605
376-		360		2250	20078	750	2412	2330	1209	1019

14(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil</u>	<u>Cost</u>
994	30			5490	30213	6861	1209		\$25.05
1346					38211	8077	1405		27.20
					17979	5381	1022		17.58
				6824	37847	5285	1612		23.50
1815	1600			3790	47310	6626	1301		36.34
5475					33664	6449	1341		25.19
1637				2152	30724	8321	995		30.89
3036					42452	9288	1775		32.88
2424				7673	50743	8777	1481		34.32
1851	113	76			20585	5316	885		23.22
1538	50	92			29538	8166	1444		20.45
3540		105			35050	7772			
343		205			14184	5426	751		18.85
654					19611	5374			
705				300	2035	7861	740		27.50
949					40074	7460	1246		32.17
733					25597	7240	1329		19.25
6321	1012				44206	7598	1325		33.40
2310					28407	5812	1093		28.10
2343		200		2776	33255	5185	742		44.80
15621					58618	8329	1397		42.00
6776	128	362			50328	7707	1453		34.70
2355	200	400			33567	8729	1128		29.78
1329		1400			34819	8505	1311		26.60
3719		100			45166	9058	1575		28.70
929				870	30143	6042	920		32.70
2951					33359	5408	943		35.39

15(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
377-		2150			48686	3373	231	4157	(1)	2206
378-	929	135		1800	10341	430	394	1150	791	95
379-	400	1792	5910		14316	885	1662	1906	1468	673
380-	125	240		2250	14135	992	620	2490	483	225
381-		405		2500	3034	1547	2485	3855	2298	1700
382-	1571	80	1200		9090	1085	666	1569	665	160
383-		2280			25800	600	1748	3499	838	
384-	385	2854	1575	1500	25704	1333	3880	3371	846	225
385-		2155			23802	1125	1087	3020	1518	
386-	4068	2065			18976	1304	1992	2838	1302	280
387-					30656	620	1443	3992	2483	
388-	326	1947			23299	2916	862	2820	996	2053
389-		33	450	1400	11661	908	813	1334	1749	287
390-		300		2000	16709	1026	1599	2979	1186	217
391-	215	400			19537	854	1961	2833	1075	1038
392-	500	1600			25061	(2)	2047	2403	1745	612
393-	300	1510	200		17425	(2)	1529	2450	1969	780
394-	100	1581			10335	846		628	(1)	1087
395-	173	1550			12249	(2)	891	1351	(1)	1955
396-	350	1710			16986	891		3602	1703	142
397-		1758			15277	406	2676	2400	1149	852
398-	205	1852	820		18072	1565		1954	1504	
399-		2800	2413	1440	31823	(2)	3783	3439	2291	1411
400-	440	1800		2125	23357			1562	775	1423
401-		100			18977			719	2647	
402-		1500			11098	316	150	605	417	235
403-		1850	495		10655			393	395	795

15(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
1058		552			62413	5903	1017	\$61.35
235		125			16425	6346	436	37.79
2291				1136	31939	6426	1178	27.15
2000		228		218	24066	8153		
2847					20671	7381		
1144	75				17278	5396	731	23.60
				1996	36761	9462		
2023				1797	45475	7414	1356	33.23
2510			230	8	35455	9060		
2085					34910	5133		
2678					41872	8533		
3872		150			39241	7176	1352	29.23
808					19443	5512	966	20.10
1646				1305	28967	6848	1043	27.82
986				3500	32399	6133		
2420					36388	8565	1366	26.62
1799	527		1888	234	30611	7878	1123	27.27
826				2243	17646	5848	591	29.80
1885		200		3714	23968	5935	923	29.95
571	259		43	2951	29208	9825	921	31.73
1167					25685	5407	880	29.16
2027				675	28574	6585	951	30.00
2089		408	2766	166	54829	8696	1353	40.60
4820				1887	38189	9654	2993	12.76
					22443	6614		
4805	75				19201	5028	1114	17.25
443	70				15096	7216	1016	14.85

16(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
404-		2400	1675		17654			2184		
405-	250	2500	1480	5315	20411		500	2700	3000	1000
406-	100	1600	3700		19500			1450	750	2000
407-	5000	2400		1440	29060			2500	3000	1300
408-		2200			17693			1075		50
409-		2160			24809		31	2335	549	999
410-		2000	1260	1350	33638			2500	1500	
411-		1800	700	2300	34979			1850	600	551
412-	200	2100			18000		250	960	150	750
413-			1500	3600	7200		100	900	500	100
414-		1800			15787			1442	316	240
415-		2400			32528			1900		1300
416-		1600		1200	22870			920		1500
417-		3500	1000	3150	45845			3600	1000	
418-		1579	500		17597	1190	855	1200	2664	1754
419-	75	435	3375	2500	20505	2500	1174	2150	1796	1050
420-	11	3683			22737	1001	1705	1872	2429	925
421-	283	2005	1300		21105	1201	1801	1674	2529	778
422-	55	1898			14891	170	1135	2805	2542	592
423-	100	2268			16947	86	530	855	253	40
424-		1410			18222		433	1080		260
425-	125		750	1500	11000		100	825	600	260
426-	120	280			9271				971	
427-	61	100		600	8940			1000	661	297
428-	210	2114	4207	683	26200	780	889	3006	2532	1086
429-	364	1235	453		23799	712	1183	3956	3790	1203
430-	1900				24523	186	2501	2560	3873	

16(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
746					24659	8109	1740	\$14.15
1000	100	28			38284	9957	1416	27.12
2000	200				31300	6967	1213	25.80
		250			44950	8222		
	100				21118	5669		
2345					33248	7624	1234	27.00
5000				57	47305	8850	1980	23.90
118					42898	6984	1574	27.20
500	250				23160	5527	912	25.37
1200					15100	5151		
369		72			20026	5314	823	24.32
600					38728	9790		
400					28490	5074	1162	24.50
350	400				58845	8200		
1523					28862	8698	778	37.08
3800	850	750		1079	41439	7541	840	49.20
1108			1621	1127	38218	7856	918	41.63
3050			1064	1821	38611	6207		
1086					25174	6381	940	26.78
861	92			254	22286	6247	936	23.73
2384	391			413	24593	6765		
890		100			16150	5748	950	17.00
	29				10671	5874		
486					12147	5864		
6737	196		963	1716	51319	7196	1329	38.63
1801	198			538	39232	6324	949	41.35
1081				1822	38446	6758	1004	38.29

17(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
431-	653	2668	1419		30089		1130	4353	3411	1707
432-	75	2502			15200		1293	1610	1385	889
433-	605	2195		1350	19663		3074	2626	4109	388
434-		1765	1440	1500	27331	79	1729	2179	2531	507
435-	435	2370	575		21400	248	1450	2916	1997	1762
436-	87	200	540	4541	14855	158	794	1710	2210	694
437-		374	1800		20466	356	630	3246	1726	306
438-		1920	2174	2810	11237	57	57	2116	916	117
439-	213	2568	2190	1200	24379	4	792	3395	3050	1140
440-	748	2290		594	23038	655	893	2304	1987	1433
441-	260	2940	693	3601	25529	25	600	3209	2381	1031
442-	291	2069	1025	1062	26597	1290	1087	3347	1940	1492

17(b)

<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>Pop.</u>	<u>A.D.A.</u>	<u>Pupil Cost</u>
3585	140	20		358	49715	6521	1256	\$39.60
2235	395			178	25762	6081	593	43.38
2597	315	140	569	335	37958	5734	1071	35.50
3361				259	42683	8689	1408	30.40
3442	136	1057		168	37958	5734	967	39.35
520			119		26428	5629	797	33.19
1903				2866	33673	5637	1035	32.60
			2		21406	6092	783	27.32
6551	193			241	45916	8692	1113	41.34
2653	69			228	36902	8829	940	39.21
4300	97			1372	46488	8740	1299	35.79
1251				'2291	44742	6645	1247	35.90

Table II presents in the form of a frequency table the material which precedes (Table I). The numbers at the left of the page (1-50, 51-100, etc.) refer to dollars and the figures which appear in columns two to seventeen inclusive mean the number of cities in each case. To illustrate, there are nine cities which spend from one to fifty dollars each for board of education, five cities do not exceed these limits for the superintendent's office, and eighteen do not spend more than fifty dollars for textbooks.

On the last page of the table will be found the median number of dollars spent for each item by the cities included in this study. The median is \$297 for the board of education, \$2007 for the superintendent's office, \$1419 for supervisors, \$1838 for principals, \$20,625 for the salaries of teachers, and so on for each item concluding with a median total expenditure for schools of \$34,137. It is necessary to use great care in applying these standards since they are taken from cities ranging in population from five to ten thousand; in other words, some of these cities are practically twice as large as others and for that reason, other conditions remaining constant, they should spend twice as much. The table shows the extent of variation between different cities; for illustration, we find nine cities spend less than fifty dollars for the expenses of the board of education, but one city spends more than five thousand dollars. In most of the other items the range is even greater.

This table is not especially important in itself but is included here largely because of its bearing upon the more significant results which are found in later tables.

Table II

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries and expenses of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies, and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance-repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payments to other schools, pensions, rent, etc.

Table II

Shows How Many Cities Spend the Number of Dollars

Indicated at Left of Table for Each Item.

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
1- 50	9	5				18	8			5		21	18	7	14
51- 100	28	5	1			21	13		1	14	2	39	28	4	12
101- 150	42	4	0			11	6		2	11	3	23	14	3	11
151- 200	24	8	1			7	9		0	13	2	26	19	2	19
201- 250	29	1	0			7	6		2	13	3	15	20	2	13
251- 300	32	4	1			5	9		5	19	2	10	19	4	15
301- 350	18	0	1			3	7	1	4	14	7	4	4	3	5
351- 400	17	4	1			5	6	3	6	19	6	13	7	2	5
401- 450	12	5	4			8	11	2	2	9	3	5	5	4	6
451- 500	11	1	9			4	16	0	12	21	9	6	3	1	3
501- 550	9	1	2			5	8	0	3	9	3	1	3	5	1
551- 600	9	1	3	3		4	8	3	11	11	8	3	6	3	4
601- 650	9	1	7	2		8	5	3	9	15	4	0	3	0	1
651- 700	5	2	5	1		9	6	6	9	9	2	3	0	4	3
701- 750	5	3	5	0		7	12	6	3	9	5	2	2	3	4
751- 800	3	1	5	2		12	5	3	12	12	6	0	1	2	3
801- 850	1	3	7	0		12	4	3	8	2	5	0	1	1	4
851- 900	3	1	7	5		7	10	5	9	10	9	0	3	2	5
901- 950	3	0	4	0		2	5	2	4	8	8	0	0	0	3
951-1000	5	1	2	2		9	5	3	7	14	15	1	1	3	1
1001-1050	6	0	4	0		9	7	6	6	5	2	2	0	0	0
1051-1100	2	5	9	7		8	9	7	7	4	10	3	2	4	4
1101-1150	5	2	2	0		5	6	7	10	7	9	1	0	2	4
1151-1200	5	3	4	17		12	9	3	12	9	5	1	3	3	0
1201-1250	0	2	1	1		7	8	5	13	7	7	0	0	0	2
1251-1300	1	2	8	13		7	7	3	4	6	7	2	0	2	3

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
1301-1350	2	1	6	6		6	3	7	6	3	3	0	0	1	1
1351-1400	1	4	2	3		8	4	4	7	5	8	0	1	1	3
1401-1450	0	5	8	3		3	7	6	7	2	5	1	0	1	0
1451-1500	1	11	8	11		7	11	5	16	3	7	1	0	1	1
1501-1550	2	6	3	2		2	7	2	4	1	8	2	0	1	0
1551-1600	3	15	7	8		3	6	7	5	3	5	1	0	0	0
1601-1650	1	6	0	0		6	4	6	7	4	5	0	0	2	1
1651-1700	3	10	3	2		3	4	9	3	4	7	0	0	3	1
1701-1750	1	6	2	1		2	7	8	14	2	4	1	0	0	1
1751-1800	0	26	7	7		0	3	5	7	2	4	1	0	0	1
1801-1850	0	9	3	4		3	2	6	5	0	5	0	1	0	2
1851-1900	1	12	3	3		3	2	9	2	1	7	1	0	2	2
1901-1950	1	12	3	1		4	4	9	5	2	3	0	1	1	1
1951-2000	0	22	2	10		7	6	9	12	8	10	1	0	0	1
2001-2050	0	14	1	1		1	3	2	3	2	8	1	0	0	0
2051-2100	1	25	0	3		1	4	5	3	4	6	0	0	0	0
2101-2150	0	10	0	1		1	4	11	5	2	2	4	0	0	3
2151-2200	0	15	3	2		2	3	8	2	1	6	1	0	3	1
2201-2250	1	14	2	4		3	3	7	6	5	2	0	0	1	2
2251-2300	1	13	0	3		0	2	8	6	2	3	0	0	1	2
2301-2350	0	3	1	1	1	0	4	11	3	2	5	0	0	1	1
2351-2400	1	15	2	1	0	2	5	6	7	2	8	0	0	2	1
2401-2450	1	11	3	1	0	0	3	6	4	1	2	0	0	1	1
2451-2500	0	7	0	3	0	1	3	8	6	2	4	1	0	0	1
2501-2550	1	10	0	0	0	0	0	4	1	0	3	0	0	0	1
2551-2600	1	7	2	0	0	0	1	3	4	4	3	1	0	0	0
2601-2650	0	6	0	1	0	0	2	6	2	3	4	0	0	2	2

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
2651-2700	0	6	1	1	0	0	1	3	4	4	3	1	0	0	0	
2701-2750	0	2	1	1	0	1	0	10	2	0	1	0	0	1	0	
2751-2800	0	5	2	2	1	1	5	6	4	0	2	1	0	1	1	
2801-2850	2	2	2	2	0	1	1	17	2	0	4	0	0	1	0	
2851-2900	0	5	1	0	0	0	3	3	0	2	6	0	0	1	2	
2901-2950	0	2	1	0	0	1	2	6	2	0	2	0	0	0	0	
2951-3000	0	5	1	1	0	0	3	5	6	2	8	0	0	0	2	
3001-3050	0	2	1	0	1	1	0	2	2	3	5	0	0	0	0	1
3051-3100	0	1	0	2	0	0	2	5	3	0	1	0	0	1	0	0
3101-3150	0	2	1	1	0	0	0	6	2	0	4	0	0	1	0	1
3151-3200	1	1	3	0	0	0	2	5	0	0	1	1	0	0	0	0
3201-3250	0	2	0	0	0	0	1	6	2	0	2	0	0	0	0	0
3251-3300	0	1	1	0	0	2	0	3	1	0	0	0	0	0	0	0
3301-3350	0	3	1	1	0	0	1	3	2	0	5	0	0	1	0	0
3351-3400	0	3	2	0	0	1	1	6	1	0	2	0	0	0	0	0
3401-3450	0	2	1	3	0	0	2	4	3	1	5	0	0	0	1	0
3451-3500	0	2	0	1	0	0	1	5	0	2	1	0	0	1	1	0
3501-3550	0	2	2	0	0	1	1	2	0	0	2	0	0	0	1	0
3551-3600	0	0	0	2	0	0	1	5	0	1	2	0	0	0	0	0
3601-3650	0	0	0	1	0	0	1	2	5	1	1	0	0	1	0	0
3651-3700	0	1	1	1	0	2	0	2	1	1	1	0	0	1	0	0
3701-3750	0	0	0	0	0	0	1	0	2	0	4	0	0	1	1	0
3751-3800	0	1	1	0	0	0	3	6	1	3	2	0	0	0	1	0
3801-3850	0	2	1	0	0	0	1	0	0	1	1	1	0	0	0	0
3851-3900	0	1	0	3	0	0	2	3	2	1	2	0	0	0	0	0
3901-3950	0	1	0	0	0	1	1	3	0	0	2	0	0	0	1	0
3951-4000	0	1	0	1	0	0	0	2	2	0	1	0	0	1	0	0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
4001-4050	1	0	0	1	0		0	3	2	0	2	0	0	0	0	0
4051-4100	1	2	0	4	0		0	1	0	0	1	0	0	0	0	0
4101-4150	0	0	1	1	0		1	3	2	1	0	0	0	0	0	0
4151-4200	0	1	1	1	1		0	3	1	0	0	1	0	0	0	0
4201-4250	1	0	1	1	0		0	1	0	0	2	0	0	0	1	0
4251-4300	0	0	1	0	0		0	4	1	0	1	0	0	0	0	0
4301-4350	0	0	0	0	1		1	1	0	0	1	0	0	0	1	0
4351-4400	0	0	0	0	0		1	2	1	0	2	0	0	0	2	0
4401-4450	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0
4451-4500	0	0	0	0	0		2	4	1	0	0	1	0	0	0	0
4501-4550	0	0	0	1	0		1	0	1	0	2	0	0	0	0	0
4551-4600	0	0	0	0	0		1	0	1	1	2	0	0	0	0	0
4601-4650	0	0	0	0	0		0	1	1	0	2	0	0	1	0	0
4651-4700	0	1	1	2	0		0	0	0	0	0	0	0	0	0	0
4701-4750	0	0	0	1	0		0	1	0	1	2	0	0	0	0	0
4751-4800	0	0	0	1	0		1	0	0	0	1	0	0	0	0	0
4801-4850	0	0	2	3	0		0	2	0	0	3	0	0	0	0	0
4851-4900	0	0	0	1	0		1	3	0	0	0	0	0	0	0	0
4901-4950	0	0	0	1	0		0	1	1	0	2	0	0	0	0	0
4951-5000	1	1	0	1	0		0	1	0	0	2	0	0	0	0	0
5001-5050	0	0	0	1	0		0	0	0	1	1	1	0	0	0	0
5051-5100	0	0	0	0	0		0	0	0	0	1		0	0	0	0
5101-5150	1	1	0	0	0		0	2	1	1	1		0	1	0	0
5151-5200		0	0	1	0		0	2	0	0	0		0		0	0
5201-5250		0	1	1	0		1	1	2	0	0		0		0	0
5251-5300		0	0	1	0		0	1	0	0	1		0		1	0
5301-5350		0	0	1	0		0	0	0	0	1		1		1	0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
5351-5400	0	0	1	0			0	0	0	0	0				0	0
5451-5500	0	0	1	0			1	1	0	0	1				1	0
5551-5600	0	0	3	0			0	0	0	0	0				0	0
5601-5650	0	0	0	0			0	1	0	0	0				0	0
5651-5700	0	0	0	0			0	2	0	1	0				0	0
5701-5700	0	1	1	0			0	0	0	0	0				00	0
5751-5800	0	0	1	0			1	1	0	1	0				0	0
5801-5850	0	1	0	0			0	0	0	0	1				0	0
5851-5900	0	0	1	0			0	2	0	1	0				0	0
5901-5950	0	1	1	0			2	1	0	0	0				0	0
6051-6100	0	0	1	0			0	0	0	0	0				0	0
6151-6200	0	0	0	0			2	0	0	0	0				0	0
6201-6250	0	0	1	0			0	0	0	0	0				0	0
6251-6300	0	0	0	0			0	1	0	0	0				0	0
6301-6350	0	0	0	0			1	0	0	0	2				0	0
6351-6400	0	0	1	0			0	0	0	0	1				0	0
6401-6450	0	0	0	0			0	1	0	0	0				0	0
6451-6500	0	0	1	0			0	0	0	0	1				0	0
6501-6550	0	0	0	0			1	1	1	0	0				0	0
6551-6600	0	0	1	0			0	0	0	0	1				0	0
6601-6650	0	0	1	0			0	1	1	0	1				0	0
6651-6700	0	0	0	0			1	0	0	0	1				0	0
6701-6750	0	0	0	0			0	0	0	0	2				0	0
6751-6800	0	0	0	0			0	0	0	0	2				0	0
6801-6850	0	0	1	0			0	0	0	0	1				1	0
6901-6950	0	0	0	0			0	0	0	0	1				0	0
6951-7000	0	0	0	0			0	0	1	0	1				0	0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
7001-7050	0	0	0	0			0	1	0	0	0				0	0
7051-7100	0	0	0	0			0	1	0	1	1				0	0
----- 7151-7200	0	0	0	1			1	1	0	0	0				0	0
----- 7601-7650	0	0	1	0			0	1	0	1	0				0	0
7651-7700	0	0	0	0			0	0	0	0	0				1	0
----- 7951-8000	0	0	0	1			0	0	0	0	0				0	0
----- 8201-8250	0	1	0	1			0	0	0	0	0				0	0
8401-8450	0	0	0	0			0	0	0	0	0				0	0
8451-8500	0	0	0	0			1	1	0	0	0				0	0
----- 8551-8600	0	1	0	0			0	0	0	0	0				0	0
----- 8851-8900	0	1	0	0			0	0	0	0	0				0	0
8901-8950	0	0	0	2			0	0	0	0	1				0	0
8951-9000	0	0	0	1			0	0	0	0	0				0	0
----- 9051-9100	0	0	0	1			0	0	0	0	0				0	0
9105-9150	0	0	0	1			0	0	0	0	0				0	0
----- 9251-9300	0	0	0	1			0	0	0	0	0				0	0
9301-9350	0	1	0	0			0	0	0	0	0				0	00
----- 9451-9500	0		0	0			0	0	0	1	0				0	0
----- 8951-9900	0		0	0			0	0	0	1	0				0	0
9901-9950	0		0	1			0	1	0	0	0				0	0
9951-10000	0		0	1			1	1	0	0	0				0	0
10001-10050	0		0	0			0	0	0	0	0				0	1
----- 10201-10250	0		0	1			0	0	0	0	0				0	0
10251-10300	0		0	1			0	0	0	0	0				0	0
10301-10350	0		0	2			0	0	0	1	0				0	0
----- 10651-10700	0		0	1			0	0	0	0	0				0	2
----- 10851-10900	0		0	1			0	0	0	0	0				0	0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
10901-10950		0		0	1		0	0	0	0	0				0	0
10951-11000		0		0	1		0	0	0	0	0				0	0
11001-11050		0		0	1		0	0	0	0	0				0	1
11051-11100		0		0	1		0	0	0	0	0				0	0
11101-11150		1		0	0		0	0	0	0	0				0	0

11201-11250				0	0		0	1	0	0	0				0	0

11351-14000				0	0		0	0	0	0	0				0	1

11451-11500				0	1		0	0	0	0	0				0	0

11651-11700				0	1		0	0	0	0	0				0	0
11701-11750				0	0		0	0	0	0	1				0	0
11751-11800				0	0		0	0	0	1	0				0	0

12101-12150				0	1		0	0	0	0	0				0	1
12151-12200				0	1		0	0	0	0	0				0	0
12201-12250				0	1		0	0	0	0	0				0	0

12351-12400				0	0		0	0	0	0	0				0	0

12451-12500				0	4		0	0	0	0	0				1	1

12601-12650				0	1		0	1	0	0	0					0
12651-12700				0	2		0	0	0	0	0					0

12751-12800				0	3		0	0	0	0	0					0

12851-12900				0	1		0	0	0	0	0					0
12901-12950				0	1		0	0	0	0	0					0

13051-13100				0	1		0	0	0	0	0					0
13101-13150				0	1		0	0	0	0	0					0
13151-13200				0	1		0	0	0	0	0					0
13201-13250				0	1		0	0	0	0	0					0

13301-13350				0	1		0	0	0	0	0					0
13351-13400				0	1		0	0	0	0	0					0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
13401-13450				0	1		0	0	0	0	0					0
13451-13500				0	2		0	0	0	0	0					0
13551-13600				0	1		0	0	0	0	0					0
13601-13650				0	2		0	0	0	0	0					0

13701-13750				0	2		0	0	0	0	0					0
13751-13800				0	1		0	0	0	0	0					0

13851-13900				0	3		0	0	0	0	0					0

13951-14000				0	1		0	0	0	0	0					0

14051-14100				0	1		0	0	0	0	0					0
14101-14150				0	1		0	0	0	0	0					0
14151-14200				0	0		0	0	0	0	0					1
14201-14250				0	1		0	0	0	0	0					0

14301-14350				0	2		0	0	0	0	0					0
14351-14400				0	1		0	0	0	0	0					0

14451-14500				0	2		0	0	0	0	0					1

14601-14650				0	0		0	0	0	0	1					0
14651-14700				0	1		0	0	0	0	0					0

14751-14800				0	1		0	0	0	0	0					0
14801-14850				0	2		0	0	0	0	0					0
14851-14900				0	3		0	0	0	0	0					0
14901-14950				0	1		0	0	0	0	0					0
14951-15000				0	2		0	0	0	0	0					0

15051-15100				0	1		0	0	0	0	0					2
15101-15150				0	1		0	0	0	0	0					0
15151-15200				0	3		0	0	0	0	0					1

15251-15300				0	1		0	0	0	0	0					0

15351-15400				0	3		0	0	0	0	0					0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
15401-15450				0	0		0	0	0	0	0					1
15451-15500				0	2		0	0	0	0	0					0

15551-15600				0	0		0	0	0	0	0					1
15601-15650				0	0		0	0	0	0	1					0

15751-15800				0	2		0	0	0	0	0					0

15851-15900				0	1		0	0	0	0	0					0

15951-16000				0	2		0	0	0	0	0					0

16051-16100				0	0		1	0	0	0	0					0
16101-16150				0	3		0	0	0	0	0					2

16201-16250				0	1		0	0	0	0	0					0

16251-16300				0	1		0	0	0	0	0					0

16351-16400				0	0		0	0	0	0	0					1

16401-16450				0	3		0	0	0	0	0					1

16501-16550				0	1		0	0	0	0	0					0

16551-16600				0	3		0	0	0	0	0					0

16601-16650				0	1		0	0	0	0	0					0

16651-16700				0	1		0	0	0	0	0					1

16701-16750				0	4		0	0	0	0	0					0

16751-16800				0	1		0	0	0	0	0					0

16801-16850				0	1		0	0	0	0	0					0

16851-16900				0	4		0	0	0	0	0					0

16901-16950				0	3		0	0	0	0	0					0

16951-17000				0	1		0	0	0	0	0					1

17051-17100				0	3		0	0	0	0	0					1

17101-17150				0	2		0	0	0	0	0					0

17151-17200				0	4		0	1	0	0	0					0

17251-17300				0	1		0		0	0	0					0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
17301-17350				0	1		0		0	0	0					0

17401-17450				0	3		0		0	0	1					0
17451-17500				0	1		0		0	0						0

17551-17600				0	1		0		1	0						1
17601-17650				0	3		0			0						1
17651-17700				0	4		0			0						0
17701-17750				0	2		0			0						0

17801-17850				0	1		0			0						0
17851-17900				0	2		0			0						0

17951-18000				0	2		0			0						1
18001-18050				0	3		0			0						0
18051-18100				0	1		0			0						3
18101-18150				0	1		0			0						2

18201-18250				0	2		0			0						1
18251-18300				0	1		0			0						0

18351-18400				0	3		0			0						2

18501-18550				0	0		0			0						2
18551-18600				0	1		0			0						1

18651-18700				0	2		0			0						0
18701-18750				0	1		0			0						0
18751-18800				0	0		0			0						1
18801-18850				0	0		0			0						1
18851-18900				0	1		0			0						0
18901-18950				0	2		0			0						1
18951-19000				0	3		0			0						0
19001-19050				0	2		0			0						0
19051-19100				0	3		0			0						1

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
----- 19201-19250				0	0		0			0						2
19251-19300				0	2		0			0						0
----- 19351-19400				0	3		0			0						1
19401-19450				0	1		0			0						1
19451-19500				0	2		0			0						0
19501-19550				0	2		0			0						0
19551-19600				0	2		0			0						0
19601-19650				0	0		0			0						2
19651-19700				0	2		0			0						0
19701-19750				0	1		0			0						0
19751-19800				0	1		0			0						1
----- 19851-19900				0	3		0			0						0
19901-19950				0	2		0			0						1
19951-20000				0	1		0			0						0
20001-20050				0	3		0			0						1
20051-20100				0	2		0			0						0
----- 20151-20200				0	3		0			0						1
----- 20251-20300				0	1		0			0						0
20301-20350				0	1		0			0						0
20351-20400				0	2		0			0						0
20401-20450				0	1		0			0						0
20451-20500				0	2		0			0						0
20501-20550				0	2		0			0						0
20551-20600				1	0		0			0						1
20601-20650					3		0			0						1
20651-20700					1		0			0						1
20701-20750					2		0			0						0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
20751-20800					1		0			0						1
20801-20850					3		0			0						0
20851-20900					1		0			0						0
20901-20950					0		0			0						1

21001-21050					0		0			0						1
21051-21100					0		0			0						1
21101-21150					1		0			0						1
21151-21200					2		0			0						0
21201-21250					0		0			0						1
21251-21300					2		0			0						0
21301-21350					1		0			0						1
21351-21400					1		0			0						0
21401-21450					2		0			0						2
21451-21500					1		0			0						0
21501-21550					1		0			1						1

21601-21650					1		0			0						0
21651-21700					2		0			0						0
21701-21750					1		0			0						0

21801-21850					1		0			0						0
21851-21900					4		0			0						1
21901-21950					0		0			0						1
21951-22000					3		0			0						0
22001-22050					1		0			0						0

22101-22150					2		0			0						0

22201-22250					1		0			0						0
22251-22300					0		0			0						2

22351-22400					0		0			0						1

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
22401-22450					0		0			0						1

22501-22550					2		0			0						3

22651-22700					1		0			0						0

22701-22750					1		0			0						0

22801-22850					2		0			0						1

22851-22900					1		0			0						0

22901-22950					1		0			0						0

22951-23000					1		0			0						1

23001-23050					2		0			0						1

23051-23100					1		0			0						0

23101-23150					1		0			0						0

23151-23200					0		0			0						1

23201-23250					1		0			0						0

23251-23300					1		0			0						3

23301-23350					2		0			0						0

23351-23400					2		0			0						0

23401-23450					1		0			0						0

23451-23500					0		0			0						1

23501-23550					1		0			0						0

23551-23600					0		0			0						1

23651-23700					1		0			0						0

23701-23750					0		0			0						2

23751-23800					4		0			0						0

23801-23850					1		0			0						0

23851-23900					0		0			0						2

23951-24000					1		0			0						2

24001-24050					1		0			0						0

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
24051-24100					2		0			0						3

24251-24300					3		0			0						0
24301-24350					0		0			0						1
24351-24400					1		0			0						1
24401-24450					0		0			0						1
24451-24500					1		0			0						1
24501-24550					1		0			0						0
24551-24600					1		0			0						2

24651-24700					0		0			0						1

24801-24850					1		0			0						0
24851-24900					0		0			0						3
24901-24950					1		0			0						1
24951-25000					1		0			0						0
25001-25050					3		0			0						1
25051-25100					2		0			0						0
25101-25150					1		0			0						1
25151-25200					0		0			0						1

25251-25300					1		0			0						0
25301-25350					2		0			0						0

25401-25450					1		0			0						1

25501-25550					1		0			0						00
25551-25600					0		0			0						1
25601-25650					0		0			0						2
25651-25700					2		0			0						2
25701-25750					1		0			0						0
25751-25800					1		0			0						1
25801-25850					2		0			0						3

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
----- 25951-26000					1		0			0						0
26001-26050					0		0			0						1
26051-26100					1		0			0						1
26101-26150					1		0			0						0
26151-26200					2		0			0						0
26201-26250					1		0			0						1
26251-26300					1		0			0						1
----- 26351-26400					3		0			0						0
26401-26450					0		0			0						2
26451-26500					1		0			0						1
----- 26551-26600					0		0			0						2
----- 26701-26750					1		0			0						2
----- 26801-26850					0		0			0						4
26851-26900					0		0			0						1
26901-26950					1		0			0						0
----- 27001-27050					1		0			0						1
----- 27101-27150					1		0			0						1
27151-27200					2		0			0						0
----- 27251-27300					2		0			0						0
27301-27350					2		0			0						0
----- 27401-27450					1		0			0						0
27451-27500					0		0			0						1
27501-27550					0		0			0						1
27551-27600					3		0			0						0
27601-27650					0		0			0						1
27651-27700					0		0			0						1
27701-27750					0		0			0						1

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
----- 27801-27850					1		0			0						0
27851-27900					2		0			0						0
27901-27950					1		0			0						0
27951-28000					1		0			0						1
28001-28050					1		0			0						1
28051-28100					0		0			0						1
28101-28150					0		0			0						1
28151-28200					2		0			0						0
28201-28250					1		0			0						2
----- 28301-28350					3		0			0						3
----- 28401-28450					0		0			0						1
28451-28500					0		0			0						1
28501-28550					1		0			0						0
28551-28600					0		0			0						2
----- 28651-28700					0		0			0						1
28701-28750					0		0			0						1
----- 28851-28900					0		0			0						1
----- 28951-29000					0		0			0						1
----- 29051-29100					2		0			0						0
29101-29150					0		0			0						2
----- 29201-29250					1		0			0						1
29251-29300					1		0			0						0
----- 29501-29550					0		0			0						1
----- 29651-29700					0		0			0						1
----- 29901-29950					1		0			0						4
29951-30000					1		0			0						1
----- 30051-30100					2		0			0						1

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
30101-30150					0		0			0						1
30151-30200					0		0			0						1
30201-30250					1		0			0						1
30251-30300					0		0			0						2
30301-30350					1		0			0						1

30401-30450					1		0			0						0
30451-30500					0		0			0						1
30501-30550					1		0			0						2
30551-30600					1		0			0						0
30601-30650					0		0			0						1
30651-30700					2		0			0						0
30701-30750					00		0			0						2

30801-30850					0		0			0						1

30901-30950					1		0			0						0

31051-31100					0		0			0						1

31151-31200					0		0			0						1
31201-31250					0		0			0						1
31251-31300					0		0			0						1

31351-31400					0		0			0						1
31401-31450					1		0			0						1
31451-31500					1		0			0						0
31501-31550					2		00			0						0

31651-31700					0		0			0						1
31701-31750					0		0			0						1

31901-31950					0		0			0						1
31951-32000					1		0			0						1

32051-32100					1		0			0						1

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
----- 83101-83150 -----					0											1
----- 84101-84150 -----					1											0
----- 85101-85150 -----					0											1
----- 86351-86400 -----					0											1
----- 87251-87300 -----					0											1
----- 93651-93700 -----					1											0
----- 97051-97100 -----																1
----- 99901-99950 -----																1
----- 105801-105850 -----																1
----- 106801-106850 -----																1
----- 108301-108350 -----																1
----- 111251-111300 -----																1
----- 140801-140850 -----																1
----- 192451-192500 -----																1

Medians

<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
297	2007	1419	1838	20625	854	1189	3165
<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>
2325	756	1760	184	212	975	291	34137

In Table III the data of Table I are reduced to the percentile basis. The numbers at the left refer to individual cities, as cities number one, number two, etc. The (a) and (b) are divisions of each page, (a) the left and (b) the right. The table should be read across as follows: city number one uses 8.7 % of its school funds for the superintendent's office, 5.48 % for salaries of supervisors, 60.58 % for teachers' salaries and so on across the page. The sum of the percentages following each city will be found to approximate one hundred per cent for they were determined by dividing each item in Table I by its total, column 17. In order to facilitate this work a slide rule was used, and consequently slight errors may be present which are due to incorrect estimates in reading the rule. The writer considers it sufficient to say, however, that such errors are of no practical consequence since the sum of all the per cents given on each horizontal line varies less than half of one per cent from one hundred, and the majority of the cases do not vary more than one fourth of one per cent. This table makes it possible for one to see exactly how each city distributes its school funds; that is, what part of the total is used for each item. Table XIII is a list of all the cities used in this discussion with their corresponding code numbers, which enables one to turn to the data for any particular city.

Table III

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries and expenses of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies, and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance-repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payments to other schools, pensions, rent, etc.

Table III

1(a)

Percentages of Total Budget for Each Item.

Figures Refer to Per Cents and Hundredths of Per Cents.

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1-		8.70	5.48		60.58	5.61	8.10
2-			11.91		74.40		1.70
3-		9.73			69.00		12.96
4-	1.08	9.95			72.70		1.24
5-		12.40			75.60		.73
6-	1.81	8.20		4.78	67.20		
7-	1.96	4.90			75.65	1.36	2.84
8-		2.28		10.58	55.00	1.22	21.70
9-			4.02		73.70		.48
10-					74.80	1.89	
11-		5.58		3.97	78.20	1.28	
12-	.21	2.13		3.56	59.60		23.80
13-	.79	6.20	2.47	3.21	65.45	.51	3.08
14-	1.65	3.20	3.65	2.89	66.60		3.67
15-	1.31	8.40	7.28		64.00		1.21
16-	1.71	1.63			71.40		.64
17-	.72	4.52	6.98		65.90	.86	2.21
18-	3.44	5.36	7.25		58.60	2.28	1.41
19-		5.09	6.04	8.95	56.50		3.37
20-	.35	7.20			68.85		5.20
21-		5.97	3.63		64.90		3.90
22-	.16	4.26	1.13		64.80	4.19	2.11
23-		4.50	2.07		61.20	1.89	2.92
24-	1.11	3.52			54.80	2.22	2.58
25-	1.63	3.81			63.00	2.48	2.11
26-	.86	4.29	1.51		63.60	2.40	4.03

Table III
1(b)
Percentages of Total budget for Each Item.

Figures Refer to Per Cents and Hundredths of Per Cents.

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
2.84		3.82	4.87				
3.70		2.90	5.40				
3.64	.43		2.64				1.58
3.81	2.42	3.10	5.89				
2.72	1.41	1.79	5.35				
4.89		1.97	11.25				
6.28	.68	2.32	1.75	.67	.47	.86	.28
	5.22	.34	3.74				
7.15	1.34	.90	1.79	6.30			
5.35	.61	12.12	4.58			.75	
5.77	1.54	1.24	2.42				
8.00				2.70			
5.70	1.55	6.27	3.41	.75	.39	.11	
7.90	4.12	2.69	3.20				.44
6.22	2.91	2.97	3.30	.33	.95	.83	.53
9.19	6.20	.89	8.28			.11	.20
5.63	4.10	1.80	6.10				1.19
6.83	1.43	4.56	5.64				3.00
5.90	4.44	2.60	7.38				4.73
8.14	5.68						
7.10	3.50	3.52	3.40		.55	.84	3.27
6.52	5.09	1.03	5.75	.58	.49	3.64	.43
5.79		5.25	4.09	.56	.15	5.15	6.44
5.35	5.12		2.61			9.30	12.13
5.71	3.74	1.09	5.48	.25		9.42	1.14
5.91		6.61	7.37			3.01	.50

2(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
27-	.87	5.62		4.20	61.30	2.44	.47
28-	.28	6.34			67.80	3.91	2.18
29-		3.91		8.53	63.30	2.20	1.92
30-	.95	1.01	1.77	7.19	53.40	2.94	3.67
31-	.05	3.80	4.30		61.50		4.15
32-	1.41		5.03	5.03	58.60	5.03	1.21
33-	.84	5.03	5.68	8.25	51.40	4.77	.40
34-	.40	6.70	2.81	2.46	64.00	2.97	11.41
35-	.91	4.00		4.82	61.70	4.58	2.87
36-	2.88	6.40	3.83	8.20	52.00	.62	2.15
37-	.41				91.20		1.87
38-	1.18	9.84		9.40	65.50		1.92
39-		10.13			82.40		
40-	.65	13.15	3.92	9.88	65.80		
41-	1.25	9.03			72.90	4.23	2.15
42-	.20	9.91			80.30		
43-		6.53			79.60		6.50
44-	.59	9.85			78.95		
45-	1.62	11.41		10.85	66.30		1.08
46-	.62	7.69			82.30		
47-	.86	7.32			69.30	.34	1.88
48-	.63	4.75		2.75	64.10		2.13
49-	.56	6.87	4.53		85.00	.56	1.70
50-		1.06		11.20	79.50		1.55
51-	1.67	7.29	2.35		61.20	.29	2.76
52-	.34	6.96			58.10		7.16
53-	.24	.20		5.55	63.60		6.69

2(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
3.74		10.15	6.45	.70		3.73	
5.15	4.62	.10	6.05	.69		1.80	1.04
4.94	6.88	1.32	1.71	.55	.56	4.15	
6.55	17.00	1.81	2.50		.06		1.33
4.80	4.14	.91	11.20	.51		1.20	3.12
4.28	6.70	.83	.85	.05	.04	7.11	3.97
5.60		6.80	2.78	.89		7.41	.39
5.88	5.26	2.12	1.64			4.46	.01
4.90	6.30	.51	3.53	.40	.04	4.21	1.13
5.64	5.02	.58	5.06	.80	2.60	3.77	.62
1.78	1.27		1.87				1.70
2.35	2.85	.41	5.82				.73
5.82		1.62					
2.96	2.30		1.31				
3.51	1.07	2.51	3.01	.50			
5.05	1.80	2.74					
2.13	1.30	1.21	1.92	.18			.65
4.24	2.86	1.62	1.87				
3.26	2.71	2.17	.54				
2.72		2.71	4.20				
6.94	3.19	2.43	7.87				.09
9.46		8.10	8.00				
					.85		
6.99							
7.98	2.39	1.33	10.95	.58	.31		.85
7.54		3.48	16.50				
8.25	4.25	.81	10.25				

3(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
54-	2.49	5.71	7.50	7.63	40.60		3.02
55-	.48	7.21			62.70		
56-	3.08	6.03		7.61	61.50	2.70	
57-	1.13	7.95	3.03		64.60	1.13	.94
58-	1.23	2.99	5.75	3.76	63.70		5.58
59-		4.90			59.00	.49	2.01
60-	.60	7.80			77.40		2.23
61-	.78	11.75			65.40	.38	2.47
62-		5.75	1.82		72.00		3.70
63-	1.04	3.96		9.44	62.81	.83	
64-	1.74	4.41		2.62	63.60	.10	1.63
65-	.58	8.40		7.85	58.90		.78
66-	.36	6.93			67.50	.46	1.66
67-	.46	5.60			52.60		2.50
68-	1.12	8.81			56.30	.15	
69-	.91	7.08			65.50	.25	
70-	1.06	6.95	5.48		58.30	.17	5.16
71-	2.39	5.47			70.10		2.78
72-		3.81		3.41	66.00	7.89	
73-	1.40	8.61			63.10		2.04
74-	.55	5.57	8.63		60.00	.37	2.03
75-	2.53	6.64	6.06		57.50	.08	.42
76-	.56	8.67			56.40		5.20
77-	2.55	5.11		3.59	64.50		2.71
78-	.82	9.46	3.48		67.00	.53	1.45
79-	.63	5.76			93.00		
80-	.49	6.77	3.46	4.77	71.60	.23	.64

3(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
9.31	4.70	3.94	13.35	1.10	.10		.43
25.30		4.10		.17			
7.28		4.71	6.21	.26	.09		.35
7.56	5.66	3.03	4.53	.37			
8.71		6.30	1.85				
9.20	7.55	5.64	10.90				
4.56	3.45	.60	2.64				.81
8.73	2.07	1.81	6.20		.41		
8.36		3.32	4.48				.65
10.85	4.35	4.44	1.70		.57		
6.60	5.81	1.01	12.10	.17		.22	
9.99	7.85		3.93	.39			1.18
5.29		2.46	14.50	.29	.29		.29
5.94	1.92	30.70					.31
5.92	7.53		9.23	.22	.80		9.89
12.60	9.71		4.05				
7.66	2.90	4.28	7.55		.24		
6.31	3.70	.41	7.72	1.03			
8.35	3.00	4.01	1.34				2.21
13.15	3.97	1.21	5.98	.39			
7.92	2.44	2.71	9.99		.08		
8.09	4.35	7.47	6.80	.19			
6.32		6.60	15.50		.73		
6.65	4.46	1.21	7.15	.72		.56	.58
6.97	4.65	2.94	1.45				1.45
					.58		
4.47	2.33	.78	3.36		.34		.21

4(a)

Circle#	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
81-	1.49	13.90	7.15	7.45	21.40		
82-	2.76	5.71	4.20	3.05	64.50		1.98
83-	.91	4.81	14.25	2.42	52.20		6.35
84-	.81	3.47	4.07		69.10	1.05	1.41
85-	2.35	4.29		3.85	62.00		7.00
86-	1.21	5.99	6.24	2.35	61.60	.31	2.01
87-	.88	4.62		11.50	78.20		
88-	3.37	6.91			71.60		1.29
89-	.45	6.00	7.05		72.10		
90-	3.46	5.21	2.38	10.40	61.80	.36	1.23
91-	1.19	6.19	2.14	12.30	62.40	.45	.48
92-	.58	4.67			86.20		.58
93-	.58	5.60			70.30		.01
94-	.24	5.56			68.40		1.11
95-	1.01	5.94		3.56	66.50	.63	3.51
96-	.66	3.96		11.05	62.70		5.17
97-	.86	5.41			79.00		
98-	1.01	5.06	4.56	3.29	69.70		.19
99-	2.08	4.43	10.50	3.62	43.40	1.84	6.70
100-		5.80			60.00	.30	1.10
101-		4.30		4.90	62.90		2.60
102-	.50	4.40		2.10	63.90	.10	3.10
103-	1.00	.40			64.60	3.60	1.60
104-		5.90	13.50		59.30		
105-	.10	6.70		3.20	66.50	5.10	2.30
106-	1.00	6.30			67.30		.10
107-		3.90		2.70	70.60	.10	3.10

4(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>16</u>
		47.00		1.79		
7.60	2.86	3.56	2.88	.44	.12	.28
7.84	3.13	1.03	2.44	4.61		
6.25	3.22	1.62	7.98	.05	.12	.01
6.61	3.19	2.38	7.35		.61	.27
4.63	6.67	.86	3.65	4.45		
	1.07	1.53	2.46			
8.52	2.86	1.38	3.02	.34	.98	
6.40		6.20	.60	1.20		
6.40	3.32	2.28	2.44		.64	.01
5.88	2.56	.56	5.11	.45	.27	
5.61		2.34				
7.00	7.15		8.94	.09	.32	.01
5.43	3.81	8.31	8.30	.31		.48
6.20	3.58	.82	6.70	.82	.64	
7.45	3.26		4.51		1.15	.11
6.38	2.00	2.46	3.69			
7.41	5.06	1.52	2.15			
10.60	4.36	3.78	8.70			.04
10.30	8.20	2.70	2.70	.30	.40	8.20
6.30	3.30	4.40	6.10			5.00
7.60	6.30	10.70		.10	1.20	
8.70	3.60	1.00	3.30	.30		11.70
7.60	4.20	2.50	7.00			
		15.10		1.00		
9.20	6.80	3.60	5.70			
7.80	4.10	2.40	4.90	.40		

S(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
109-	1.50	3.69		2.46	58.00		6.50
109-	.28	6.12	1.61	2.56	62.60		3.65
110-	1.73	4.37			75.40	.28	
111-	.31	2.97	2.83	38.75	35.95	.09	.05
112-	1.04	5.33			66.40	.26	3.51
112-	.31	6.25		19.50	55.50		5.21
114-		.70	24.60	30.00	36.60	.13	1.09
115-		4.95	1.49	10.30	59.30	.03	9.60
116-		3.97	3.79		66.00		1.02
117-					83.70		3.95
118-		6.91			60.70		
119-	1.30	4.13	1.95	3.26	56.30		.16
120-	.24	6.83	2.02	4.45	55.50		3.60
121-	.98	13.05			71.00		
122-	1.82	7.66		11.31	70.40		1.15
122-		9.60		9.60	64.00		
124-	1.73	7.76			69.30	.22	.45
125-	.06	5.12		12.95	61.50		
126-	.71	21.10			33.10		
127-	.90	7.48	2.31	14.45	53.80	.54	.38
128-	.36	9.55		3.79	65.40		2.52
129-		13.04	3.59		69.50		
130-	.74	6.83		6.54	51.00		1.19
131-		2.14			67.90	5.35	
132-	1.07	3.65			71.10	5.13	1.46
133-		1.74			72.30	3.04	2.17
134-		2.02	1.89		55.00	3.63	5.31

5(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
5.98	2.79	19.55	3.52				
4.80	3.59	.98	10.12	.39			2.49
7.48	4.42	3.23	1.93				
3.65	1.60	.37	12.92	.19	.37		
7.07	3.74	1.04	9.46	.01	.01		
8.26	3.50	2.81	5.99				1.97
2.72				1.26	.88		2.10
4.41	3.78	.43	6.20				.64
12.35	4.42	.45	6.85	1.10			
	3.22	.95	6.51	.34			1.14
11.55	3.20	1.90	14.01	1.45	.80		
7.05	2.95	15.40	6.01	1.51			
5.91	4.05	2.24	5.01				
11.10		3.09	.83				
3.68	2.16	.32	.98	.32			
5.80	4.00	1.60	4.00	.60	.80		
7.85	1.86	1.47	9.30				
5.05			15.50				
13.35	5.94	1.17	24.80				
7.03	2.53	1.54	6.87	.72	.90		
5.54	2.11	3.16	7.23	.10			
5.05	3.46	3.32	2.04				
4.98	3.39		15.10				10.20
5.23	8.77	7.10			.39	3.20	
4.51	7.07	.41	4.50			.90	
5.85	8.32	.43	3.82			2.32	
4.89	6.58	3.48	12.20	2.04			.06

6(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
135-	.16	5.35	1.67	5.35	56.30	2.34	3.32
136-		6.50	7.57	4.01	54.50	3.09	8.83
137-	.32	5.53	1.63	3.93	56.80	3.18	4.33
138-		4.23			67.80	1.95	2.66
139-	.18	1.96	5.59	1.49	61.00		5.95
140-	2.20	6.25	6.44		55.70	2.69	
141-	.26	1.96	4.21	13.40	56.50	3.33	1.78
142-	.85	3.28	2.57		67.00	5.66	
143-	1.85	5.60		5.45	49.70	.97	5.97
144-	.54	6.71			62.00	3.08	2.96
145-	1.29	4.33	3.83		59.00	3.16	3.55
146-		4.66	2.14		56.50	2.92	3.76
147-	.09	5.47	3.14	13.75	55.40	2.99	3.04
148-					76.30		
149-	.31	3.89	2.62		62.00	2.56	2.67
150-		3.19	2.56	13.60	49.20	3.41	1.75
151-	1.02	5.06			59.10	3.09	5.18
152-		3.96	3.24	6.85	49.80	3.14	10.30
153-	1.49	3.37	1.37		68.70	2.80	2.98
154-	1.12	4.58	8.50		49.60	4.07	5.71
155-	.27	5.80	2.30	6.11	56.00	2.71	5.11
156-	3.81		3.06	10.90	45.10	.93	4.58
157-	.46	3.82	2.18	3.33	47.70	3.34	3.90
158-	1.57	5.62	4.01	15.60	34.40	2.10	1.87
159-	.40	5.36			61.90	3.28	3.18
160-	1.60	2.49			57.30		9.32
161-		5.30			72.70	3.10	3.04

6(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
5.57	9.17	.31	6.68			3.84	
8.32	4.01		1.55			1.64	
7.76	7.88	3.07	3.29			2.26	
5.50	6.80	.23	3.20			7.70	
5.53	5.79		5.48		.03	7.01	
4.92	5.79	2.08	5.17		.68	8.23	
7.57	9.05	1.12			.62		.24
7.36	3.10	3.97	2.73			3.42	
8.75	5.99	1.82	8.97		.84	3.58	.51
4.79	6.05	2.42	5.89		.73	4.22	.74
4.80	5.17	1.41	6.45		.41	4.70	1.94
7.76	8.00	5.33	2.20		.58	6.13	
7.16	5.04	1.14	2.06		.25	.12	.17
4.85							18.95
8.09	4.67	.93	7.14	.01		2.97	2.25
5.21	4.10	3.61	2.82		.28	6.76	3.55
7.49	2.33	1.04	4.30		.92	6.60	3.86
4.75	5.13	1.66	3.52		1.03	6.48	.15
5.72	3.93	1.26	4.84		1.61	.96	.93
6.27	6.30	.83	7.00		.25	4.60	1.14
5.95	4.10	.88	2.28	.13	.73	7.65	.02
11.09	3.84	8.40	3.29		.45	4.38	
8.00	7.65	3.72	7.44		.64	7.90	
7.77	6.70	1.34	4.55	.05	.38	13.80	
6.50	7.82	1.85	4.97	.33	.66	3.56	.10
6.42	7.20	.73	9.01		.91	2.33	2.67
5.55	4.46	.77	2.91		.51	.33	1.25

7(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
162-	.35	5.21	3.56	12.30	51.00	2.45	3.28
163-	1.11	3.69		6.70	60.60	.93	4.50
164-	.44	4.74	4.02	3.79	49.10	2.74	2.92
165-	.29	5.08	2.34	3.71	50.90	3.91	4.16
166-	1.01	5.43	3.58	12.05	46.70	3.01	3.14
167-	1.31	4.44	.09	12.35	54.70	2.96	3.68
168-	.12	5.03	2.30		58.40	3.09	1.78
169-		5.85	2.76	3.63	53.10	3.75	4.78
170-	.32	4.38	1.78		66.30	2.14	3.51
171-	.37	3.77		7.10	57.40	3.30	3.87
172-	.25	4.27	3.57	11.25	42.50	3.65	4.42
173-	1.70	3.18			63.10	2.15	4.64
174-	1.26	2.19	4.98	11.15	52.70	2.80	3.58
175-		5.10	5.80		56.30	2.09	3.02
176-	.73	4.83	2.74	7.48	56.00	2.52	3.64
177-	.39	3.09	1.92		60.30	3.17	2.44
178-	1.35	4.12	4.81	3.78	54.90	3.70	3.17
179-	.36	5.41	5.40		59.00	2.24	3.72
180-	.12	3.93			60.50	2.69	3.71
181-	1.98	3.82	1.70	5.25	57.50	2.40	3.59
182-	.43	5.75			63.00		1.15
183-	.44	3.91	2.13		59.00	6.52	6.49
184-	.90	5.90			66.90	.05	4.27
185-		3.74			65.40	1.19	3.14
186-	1.47	3.61	2.79		43.80	2.38	2.49
187-	.57	5.13	7.85	2.85	56.90		8.56
188-	2.27	5.77	4.06	3.14	57.40		4.40

7(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
5.60	5.76	.29	2.54		.70	5.14	1.81
8.75	4.55	2.82	2.60	.05	1.00	2.60	.45
5.21	9.51	2.43	4.72		.64	8.69	1.00
8.55	6.34	4.39	5.65		.39	3.32	.91
6.36	7.86	.77	4.46		.52	1.96	3.02
6.81	4.90	1.38	5.60		.36	.72	.60
7.45	9.60	2.51	6.54		.63	2.49	.08
5.57	7.20	1.98	5.07		.47	5.53	.17
7.73	5.37	2.73	4.10	.81	.02		.81
6.91	7.65	3.01	1.47	.02	.39	.52	4.25
7.80	9.56	.98	3.11	.18	.13	.94	1.44
7.97	7.10	.71	7.76		.42	1.23	
7.28	6.57		2.29	.01	.40	1.22	3.50
8.90	7.80	2.19	7.04		1.51	2.76	.43
8.90	4.50	1.28	3.52			2.31	1.50
5.48	6.16	2.07	3.12			10.60	1.09
7.37	6.89	.66	7.55	.10	.51	.98	
8.30	9.50	1.15	1.57		.57		2.90
10.45	6.28	1.33	3.78		.14	5.79	1.21
6.77	5.51	.69	8.20	.17	1.39	.84	.30
5.98	4.87	2.10	15.20	.28	1.75		
6.90	4.55	.97	8.75	.37			
6.40	5.15	5.45	4.03	.54			.45
9.10	7.55	3.94	5.35	.38			.19
7.06	3.20	2.01	11.65	4.47	11.60	3.34	
5.85	3.55	2.53	5.22	.57			.48
6.49	7.60	.71	6.15	.48			1.46

8(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
189-	5.14				65.30		4.90
190-	2.68	3.22	6.23	1.70	39.70	.94	2.86
191-	.76	.43			65.35		8.28
192-	1.21	4.58	3.69		55.85	.12	1.95
193-	2.17	4.40	6.38	9.30	52.00	.15	2.91
194-	.16	6.84			67.20		2.56
195-	.81	6.07	8.42	3.23	54.80	1.61	2.70
196-	1.34	4.89	2.20	2.49	62.80	.55	3.24
197-	.47	4.52	8.38		66.50	1.56	.58
198-	.54	.40	3.83	7.14	63.60	6.27	4.35
199-	.64	6.58			67.30	.18	5.25
200-	.42	5.60	3.08	2.52	60.10	4.15	2.80
201-	1.95	6.60	8.74	4.15	53.70	.35	1.64
202-	.80	6.80	4.30	2.40	56.10	3.50	2.60
203-	1.70	7.30	4.40	5.10	50.40	3.00	4.80
204-		4.80	4.30		41.70	2.30	8.70
205-	.60	5.50			55.90	1.70	3.10
206-	.90	5.30			62.30	1.50	6.50
207-	1.40	3.20	7.40	1.80	46.10	2.40	5.60
208-	2.70	5.80	1.70	2.80	48.70	1.90	3.70
209-	1.20	10.80		5.20	62.00	.50	.50
210-	1.00	6.00	3.20	6.00	58.40	1.90	5.70
211-	1.20	5.20	3.30	2.80	59.50	2.30	7.30
212-		8.50			82.00	.75	
213-	9.72	7.00			66.30		
214-		7.95	2.86	18.58	54.30	2.23	1.33
215-		9.25	5.55	4.93	72.80		

8(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
7.35	10.70		4.18	.76			1.71
6.18	4.65	20.30	3.17	4.74	1.13	2.48	
7.73	6.22	1.40	7.98	.46	.19		1.01
11.57	8.09	2.44	4.67	4.85	.52	.44	
6.45	4.76	2.63	7.50				1.08
9.08	4.54	5.48	2.78	1.22			
8.56	5.94	1.89	4.05	1.35	.62		
9.71	5.60	1.96	4.73	.22			
5.85	2.73	2.92	5.85	.39	.19		
			1.98	1.28			10.25
7.76	4.90	1.07	3.42	.39			2.59
7.80	6.65	1.92	.84	4.27			
6.56	4.42	4.12	4.40	2.82	.52		.12
	10.10	7.60	4.00	1.40		.40	
8.30	5.20	5.80	2.30	.20		1.30	
10.20	5.30		17.60	1.20	.80	2.30	.80
7.70	5.90	3.90	8.30		1.10	1.20	5.10
7.50	6.60	3.60	5.30	.50			
11.40	6.00	3.20	6.10	1.20	1.70	2.50	
8.90	9.10	1.50	9.12	.40	1.00	2.70	
7.60	7.20	.90	3.60	.50			
6.00	3.60	2.60	3.70			.90	1.00
5.50	4.70	2.80	5.00	.40			
2.72	1.87	3.90	.37				
4.65		1.81	8.95	1.29			
4.37	1.69		4.02	2.65	.18		
3.29	.62	.31	2.65				

9(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
216-	.99	6.26	3.97		79.50		.98
217-		12.11	6.54		72.75		.48
218-	.93	9.28	9.28	8.33	56.90		2.76
219-	.66	7.13		3.91	60.25	4.30	4.72
220-	1.92	5.54	2.96	3.18	59.00	.00	2.59
221-	3.49	8.57	3.76		65.12	.02	1.58
222-	.74	7.19	3.36		69.80		
223-	.38	3.61		9.25	55.25	.48	.32
224-	.50	6.35	1.67		57.30	.41	5.01
225-	.93	5.96			62.50	.25	
226-	.47	6.58			64.70		
227-	.61	5.50			74.90	.15	.30
228-	.80	5.02	1.44		60.10	3.20	5.70
229-	.47	3.98		4.46	56.20		10.60
230-	1.36	4.18	5.51	3.74	57.80	2.54	5.99
231-	.46	5.99			65.00	6.14	4.60
232-	.28			11.35	58.50		5.61
233-	.58	7.45	3.34		61.30	3.29	4.71
234-	4.61	.65	12.80	9.59	46.30	.36	5.10
235-	.54	3.95	1.75	10.43	43.20		3.08
236-		5.68	4.54		59.70	5.26	5.88
237-	.80	7.00	5.00	4.01	54.80	5.10	3.61
238-		4.55	4.78		50.99	2.21	2.86
239-	.71	5.86	2.00		50.50	1.43	1.41
240-		7.36	3.80		55.30	3.63	2.66
241-	1.35	5.55	3.90		54.20	2.89	2.02
242-		4.13		4.16	54.40	2.56	2.21

9(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
3.79	1.20	.78	1.45	.63			.44
4.36	1.45		2.42				
3.49	1.16	1.55	3.87		2.32		
8.21	1.97	3.31	5.08	.46			
6.17	2.56	1.30	13.40	.83			.52
8.28	3.52	1.27	3.23	1.24			
5.44	3.45	1.87	4.71	.89			2.28
11.10	4.28	1.78	4.68	1.84			7.01
6.50	3.26	8.36	.62				
8.75	3.73	6.07	11.65				
7.14	4.67	6.49	5.25	4.81			
7.69	3.58	1.51	5.79				
5.67	6.85	.80	10.00	.40			
6.00	3.28	4.06	10.30	.12			
7.71	3.78		7.16				
9.20	4.60	.92	3.07				
5.10	4.82		8.90	5.39			
7.60	3.99		2.65				5.10
8.20	4.70	2.32	4.55		.53		.18
9.66	4.15	9.55	10.30		.43	.77	2.13
8.95	5.43	..66	3.84				.01
3.87	4.06	2.54	8.70				.59
5.55	6.70		8.90		.67		12.95
4.31	5.80	.57	6.22			1.39	19.65
4.51	8.50	.53	1.64		.44	7.46	4.04
5.86	6.50	1.01	8.14	.08		.13	7.40
7.37	4.40	1.01	5.50			13.85	.35

10(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
243-		5.53			65.70	2.90	4.39
244-	1.00	7.02			68.50	2.28	3.82
245-	2.05	4.07	2.85	6.60	61.28	1.39	3.75
246-	.86	8.40			71.70	3.02	2.45
247-	1.72	4.81			62.20	2.92	4.26
248-					58.70	1.79	13.30
249-	1.49	4.79			69.00	4.76	6.90
250-	2.37	6.40	2.35		63.00	3.72	2.05
251-	3.12		8.03	5.90	56.20	2.41	4.80
252-	1.26	3.80	3.36	9.52	59.60	2.71	3.45
253-		.99	3.69		44.00	4.13	32.00
254-	.94	.63	6.46	3.05	63.50	2.34	4.48
255-	5.14	2.39			65.60	7.34	1.07
256-	.33	4.52	1.06	7.52	52.00	1.45	3.44
257-	.92	3.16			66.10	2.98	3.59
258-	1.22	4.71	5.62	6.53	55.40	1.88	3.30
259-		5.18			47.90		.06
260-	1.20	7.62	7.25		55.50	.26	3.39
261-	1.01	10.05	2.92	5.73	59.45		2.01
262-		7.34	7.85		65.50		3.93
263-		.70			69.65		5.45
264-	.58	7.40			62.80	2.82	1.87
265-	.75	5.74		3.25	57.48	.13	3.27
266-	1.90	6.21	4.31	10.72	54.85		1.40
267-		4.64	3.09	3.71	58.60	.58	3.19
268-		6.60		9.05	58.80	1.60	2.04
269-	.49	5.25			65.90	.65	2.02

10(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
8.53	8.65	1.11	2.92			3.25	
5.88	4.17	1.86	3.76		1.66		
7.19	3.14	2.51	3.41	.12	.35	.32	.81
4.37	1.24	2.20	3.79		.45	.02	1.49
6.16	3.29	1.66	9.99	.64	1.43		1.03
8.82	3.72	1.97	10.65	1.03			
6.16	2.42	.91	3.02		.58		
8.12	3.75	2.15	4.95	.15	.94		.15
7.01	3.42	1.34	5.18	.22	1.12	.01	1.22
7.35	3.45	1.98	1.73	.16	.63		1.03
5.56	2.82	3.29	3.29	.05			
5.60	4.22	.89	7.50	.05	.58		
6.30	5.70	1.27	3.45		1.01		.53
8.28	4.10	3.49	8.36	.02	1.24	.07	1.29
6.05	4.06	1.61	5.71	.35	.63	2.26	2.79
6.28	2.89	5.13	5.69	.27	.82	.08	
3.82	9.85	3.31	28.84	.47	.49		
6.35	8.05	1.75	6.72	1.26	.60		
6.51	8.05	1.41	2.01	.80			
6.02	5.76	.79	2.10	.73			
4.91		12.78	5.59	.03	1.05		
9.02	6.71	1.94	4.12	2.73			
6.63		9.42	8.97	.11	1.30		2.94
6.25		5.70	5.52	.29			2.92
4.28	12.00		4.80	2.64	1.39		1.05
7.75	6.96	.52	5.68	.52	.48		
4.65	7.03	3.04	9.43	.85	.70		

11(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
270-		6.27	3.84		70.70		1.63
271-	.97	5.95		3.77	57.50		1.16
272-	1.52	10.10			67.60	1.76	4.78
273-		5.81	.96	8.57	57.00	.71	.17
274-		3.41		11.82	53.50		1.87
275-		6.42	17.55		52.50	2.06	.73
276-	1.52	3.79		10.55	58.50	2.11	2.22
277-		7.13		4.52	70.60	.13	1.32
278-		8.77	4.32		59.60		4.24
279-		7.62	2.26	7.99	47.00	1.38	12.15
280-		7.18			67.20	3.15	3.62
281-	.31	6.28	2.70	3.94	58.20	1.75	3.04
282-	2.22	8.15			75.50		
283-	1.30	9.35		9.75	67.00		
284-		7.60	2.28		73.00		
285-		7.85		7.00	65.30		2.82
286-	.47	8.25			70.50		.34
287-	1.48	6.06			70.10		1.66
288-	1.57	8.08		3.44	72.80		
289-		8.30			91.70		
290-	.64	6.80		3.78	71.10		2.36
291-	.80	11.50			67.50	.27	1.08
292-	4.51				67.50	2.94	.97
293-		6.32		2.88	72.50	.76	
294-		5.25			66.40		
295-	1.54	7.85			77.40		
296-	2.34	6.40			74.10	1.24	1.29

11(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
7.41		5.50	4.41	.23			
5.30	4.68	7.61	9.92	.45	2.64		
6.18	4.13	.61	1.53	1.08	.76		
4.76		15.75	3.34	2.98			
6.55	5.28	14.42	1.78	.47	.94		
6.00		7.27	5.78	.77	.81		
	6.36	5.01	3.84	6.06			
4.37		8.11	2.58	1.25			
8.38		4.83	7.78	.01	2.05		
5.87	4.72	4.20	5.37	.26	.76		.32
4.88	1.69	1.92	4.06				6.35
8.46	4.37	1.04	7.54	1.23	.62		.14
3.45	1.64	1.80	7.21				
3.90	3.12	1.69	3.78				
3.46	2.55	3.91	7.10				
4.36	3.67	.24	7.56	1.28			
3.58	3.09	.28	13.50				
		4.60	12.50				3.59
3.64	3.45	.95	6.11				
4.76	4.16	1.41	4.96				
6.59		4.86	1.62	5.66			
12.36	5.49	1.57	4.70				
11.70				5.01			.97
7.50	2.94	3.00	9.70	5.30			
			13.20				
7.90	3.55	1.62	1.40	.17			

12(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
297-	.18	7.57			77.50		
298-		4.87		7.52	55.40		.50
299-	.26	1.26	19.55	8.16	61.20	.41	.14
300-		7.30	2.58		66.60	3.12	1.74
301-	1.47	6.41			69.80	.81	2.31
302-		6.98	7.40		63.00	.43	.44
303-	1.55	4.81			63.30		
304-	1.14	6.63	8.65		61.00	3.20	.68
305-	.48	7.65	1.93		68.10	.15	1.74
306-	.53	4.26		2.37	60.10	.84	1.29
307-		6.21	3.92		80.00		
308		9.10			73.80		
309-	1.33	6.17	5.94	3.20	51.90	6.21	2.21
310-			7.10		93.00		
311-		7.55	3.59		63.70		
312-	.81	9.37	2.57	4.48	68.60	.33	.40
313-	1.11	5.45		3.20	59.00	.24	.73
314-	1.27	6.00			65.00	.63	.50
315-	.72	7.21			69.50		1.97
316-		8.39	4.71		63.50		
317-	.40	7.50			71.70	.20	.68
318-	1.15	7.23		4.61	64.10	4.53	1.39
319-	1.52	6.65	2.04	3.26	57.90	4.95	2.52
320-	3.87	7.91			61.20	3.67	2.70
321-	12.40	6.40	1.71	3.51	50.20	1.93	1.20
322-	1.47	6.85			66.00	2.49	4.57
323-	.83	7.03	2.50	4.99	63.85	4.25	1.67

12(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
6.65	4.65	.15	3.16				
9.11	2.75	2.01	17.70				
4.24	2.78	.94		.83	.26		
9.73	3.58	1.74	3.72				
6.82	6.15	3.02	2.79	.07			.24
9.72	4.80	.43	6.54	.21	.04		
		30.40					
11.45	4.57	.91	1.83				
5.74	1.96	.86	.40	4.52		2.98	3.48
11.15	5.92	4.30	4.30	4.30	.64		
8.70				1.12			
10.15	3.41	3.14			.45		
7.57	2.76	9.41		2.61			.33
			25.10				
4.70	2.45	1.22	4.07	.81			
7.37	9.85	2.46	4.92	5.41			
5.92	3.04	2.53	3.04	11.30			.91
8.26	4.33	2.18	5.90				
8.80	3.76	2.52	8.39				
7.43	4.08	1.09	6.81		.06		
10.15	3.06	.69	1.92				.99
7.44	5.31	1.54	1.84	4.88			
6.55	3.10		8.06			2.99	
5.70	5.26	2.08	6.86		1.76		
9.77	4.39	.33	4.11				
5.72	3.78	1.17	4.25				

13(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
324-	.63	.01	4.12	4.75	66.45	3.37	4.95
325-	3.76	4.38			58.85	6.07	8.83
326-	3.88	.63		4.90	56.75	4.61	4.14
327-	3.32	.44		5.24	65.10	5.93	7.14
328-	.92	4.55			62.50	2.49	6.14
329-	5.21	.32	4.47	6.10	51.80	2.72	4.29
330-	1.08		1.20		64.00	3.27	9.22
331-	1.28	4.03			61.55	4.23	4.23
332-		8.19	3.89	5.83	54.40	2.79	5.56
333-	5.14	7.10			53.25	12.00	5.41
334-	1.28	6.51			68.70	3.23	3.01
335-	1.26	6.46			65.03	3.45	3.39
336-	1.43	5.22			60.35	2.57	6.02
337-		4.42			59.95	3.71	5.17
338-	1.39	4.93			59.50	4.29	14.20
339-		13.00			15.00	7.83	13.64
340-	.70	7.68	2.81	3.05	58.00	5.45	6.92
341-	11.50			5.17	51.70	3.33	2.90
342-	6.10	1.06			65.00	2.80	1.52
343-	3.42	6.50			58.30	2.04	3.19
344-	.63	1.71	7.79	8.44	53.50	2.72	2.50
345-	1.85	.15		6.97	47.30	3.27	3.88
346-		6.23		6.27	55.20	22.20	2.78
347-	.68	3.84	2.04	2.08	42.40	2.35	2.78
348-	.46	5.76			54.90	3.95	6.70
349-	.91	6.21	8.46		65.60	2.84	5.15
350-	.66	5.74	3.14		55.90	3.59	2.52

13(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
9.10	2.37	.26	3.53		.40		
4.41	4.23	1.51	8.08				
8.47	3.12	1.88	9.68			.23	1.68
4.34	4.00	.55	4.05				
8.50	5.32	3.31	5.73		.39		
6.56	1.78	3.07	5.27		.04	1.45	7.69
6.77	5.87	5.09	2.52	.34	.64		
7.98	2.34	1.67	12.72				
5.56	2.22	1.00	8.34	1.39	.83		
7.96	3.68	1.10	1.93	.51	1.93		
7.65	3.27	1.35	2.43	2.13	.64		
9.27	3.16	3.28	4.36				
6.28	7.92	1.61	7.42	1.20			
5.05	4.17		1.03				19.61
5.18	2.50	1.18	6.55		.31		
16.75	8.92	3.06	15.10		.96		
5.85	2.57		6.56	.28	.09		
8.95	2.80	2.11	9.04		.66	.22	1.62
8.25	2.23	5.90	7.60				1.65
9.37	2.08	1.25	15.60				
7.60	2.46	1.39	5.24		.21		5.87
6.23	5.81	.25	.83	.53			22.90
4.10	3.18	9.10	8.20	.82			
6.50	1.32	6.00	1.58				28.50
9.66	3.91	4.20	10.50				
6.30	3.00	1.76	5.66				.14
6.20	1.65	.09	3.29	.09			19.30

14(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
351-	.65	6.70			61.90	3.33	5.88
352-		.06		7.23	71.00	2.34	5.57
353-		4.93		9.03	45.20	5.82	4.24
354-	.50	4.27	5.94	2.54	43.70	2.25	1.84
355-	.95	6.09		5.74	46.00	3.71	4.34
356-		2.02	6.28	3.58	54.00	4.22	5.31
357-	5.60	4.48	4.28	6.60	46.80	4.54	5.64
358-	.71	4.79	6.95	3.95	50.10		2.85
359-	1.35	.89		6.13	59.10	5.66	4.97
360-	1.92	5.77			67.80	5.14	4.87
361-	.24	5.56		1.80	53.20	8.14	9.90
362-		.34			76.70		8.37
363-	2.80	6.51			63.10	3.92	2.49
364-			2.21		68.50	4.55	5.17
365-	.25	5.00			54.60	8.75	14.75
366-	1.10	7.77			65.50	3.44	4.60
367-	.29	4.73			58.40	1.78	2.79
368-	1.23	7.58			67.00	1.76	4.14
369-	4.76	8.37			57.40	2.49	2.05
370-	1.97	4.45	2.43	1.46	48.20	2.07	3.26
371-	4.78	5.90	2.23		54.20	3.27	3.48
372-		5.07			63.10	9.70	.55
373-	7.42	6.45			56.10	3.69	4.54
374-	1.44	4.90	2.08		64.80	4.50	4.29
375-	.95				67.50	1.44	4.37
376-	1.08			6.75	60.10	2.25	7.22
377-		3.45			78.00	5.41	.37

14(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
9.01	2.68	6.50	3.52				
6.85	6.89						
8.36	3.71	.53					18.00
6.95:	4.25	12.40	3.84	3.38			8.00
9.35	4.29	3.20	16.25				
5.83	4.65	1.92	5.32				7.00
9.55	4.30	1.15	7.15				
6.42		4.34	4.76				15.10
5.95	5.40	.67	8.99	.54	.37		
5.76	2.08	.87	5.20	.17	.31		
6.40	2.91	1.37	10.10		.30		
7.42	3.26		2.41		1.42		
7.26	3.87	6.55	3.33				
10.95	3.10	.50	3.52				1.50
11.20	2.52	.62	2.37				
8.85	2.36	3.71	2.86				
6.97	1.76	6.67	14.30	2.29			
5.28	3.00	1.91	8.15				
5.95	1.10	1.96	7.05		.60		8.35
5.65	2.68	1.17	26.60				
4.95	1.37	5.35	13.50	.25	.71		
7.53	5.17		7.01	.59	1.19		
8.20	5.73		3.81		4.01		
6.25	2.35	.84	6.23		.22		
10.10	4.17	5.33	3.08				2.89
6.98	3.62	3.05	8.85				
6.65		3.54	1.69		.88		

15(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
378-	5.62	.83		10.95	63.00	2.62	2.38
379-	1.25	5.62	18.55		44.80	2.77	3.65
380-	.52	.99		9.35	58.70	4.13	2.58
381-		1.96		12.10	14.65	7.48	12.05
382-	9.11	.46	6.95		52.70	6.12	3.86
383-		6.20			70.20	1.63	4.75
384-	.84	6.28	3.47	3.30	56.60	2.89	8.55
385-		6.07			67.10	3.18	3.06
386-	11.65	5.91			54.30	3.74	5.70
387-					73.30	1.43	3.45
388-	.81	4.95			59.40	7.42	2.20
389-		.17	2.22	7.20	60.00	4.67	4.18
390-		1.04		6.90	57.70	3.55	5.51
391-	.66	1.23			60.40	2.64	6.07
392-	1.38	4.40			68.90		5.63
393-	.97	4.93	.65		57.00		4.98
394-	.56	8.96			58.50	4.80	
395-	.72	6.47			51.10		3.73
396-	1.20	5.85			58.20	3.06	
397-		6.84			59.40	1.58	10.40
398-	.72	6.50	2.88		63.20	5.49	
399-		5.11	4.40	2.62	58.10		6.91
400-	1.15	4.72		5.56	61.10		
401-		.44			84.50		
402-		7.80			57.60	1.62	.78
403-		12.30	3.28		70.50		
404-		9.74	6.80		71.60		

15(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
7.00	4.81	.58	1.43		.76		
5.97	4.59	2.10	7.18				3.56
10.35	2.00	.91	8.32		1.19		.83
18.65	11.10	8.23	13.80				
9.10	3.85	.92	6.62	.43			
9.51	2.26						5.43
7.42	1.86	.48	4.46				3.92
8.51	4.27		7.07			.65	.02
8.11	3.74	.83	5.97				
9.52	5.94		6.40				
7.18	2.54	5.23	9.86		.38		
6.86	8.99	1.48	4.16				
10.30	4.10	.73	5.68				4.61
8.75	3.33	3.21	3.05				10.75
6.62	4.80	1.68	6.65				
8.00	6.42	2.55	5.86	1.72		6.16	.75
3.56		6.15	4.70				12.72
5.65		8.16	7.88		.83		15.50
12.35	5.83	.48	1.96	.88		.14	9.95
9.34	4.46	3.33	4.54				
6.50	5.27		7.10				2.37
6.27	4.17	3.58	3.82		.74	5.05	.30
4.10	2.03	3.73	12.65				4.95
3.20	11.85						
3.16	2.17	1.22	25.20	.39			
2.59	2.60	5.28	2.94	.46			
8.85			3.03				

18(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
405-	.65	6.53	3.88	13.80	53.40		1.31
406-	.32	5.11	11.85		62.20		
407-	11.15	5.34		3.21	64.60		
408-		10.42			83.80		
409-		6.49			74.70		.09
410-		4.23	2.86	2.86	71.10		
411-		4.20	1.64	5.36	61.50		
412-	.86	9.08			77.80		1.08
413-			9.95	23.80	47.70		.68
414-	8.98				78.80		
415-		6.20			84.00		
416-		5.61		4.21	80.40		
417-		5.95	1.70	5.35	77.90		
418-		5.45	1.73		61.00	4.13	2.97
419-	.18	1.05	8.15	6.04	49.50	6.04	2.64
420-	.02	9.64			59.50	2.68	4.46
421-	.72	5.19	3.36		54.60	3.11	4.66
422-	.29	7.55			59.10	.67	4.51
423-	.45	10.20			76.00	.38	2.38
424-		5.74			74.20		1.76
425-	.77		4.64	9.27	68.00		.62
426-	1.12	2.61			87.00		
427-	.50	.82		4.95	73.50		
428-	.41	4.11	6.00	1.33	61.00	1.54	1.73
429-	.92	3.14	1.15		60.50	1.81	3.01
430-	4.95				63.70	.48	6.50
431-	1.31	5.36	2.85		60.50		2.27

16(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
7.05	7.83	2.65	2.65	.27	.07		
4.63	2.50	6.40	6.40	.64			
5.56	6.67	2.90			.55		
5.10		.23	.47				
7.07	1.65	3.00	7.01				
5.29	3.18		10.60				.12
4.32	1.40	1.29	.27				
4.15	.64	3.24	2.16	1.08			
5.96	3.31	.66	7.95				
7.20	1.50	1.20	1.84		.36		
4.91		3.36	1.55				
3.23		5.26	1.34				
6.12	1.70			.59	.67		
4.16	9.25	6.09	5.27				
5.20	4.33	2.54	9.18	.60	1.81		2.60
4.90	6.35	2.42	2.90			4.25	2.95
4.33	6.55	2.02	7.90			2.76	4.71
11.15	10.12	2.46	4.32				
3.84	1.12	.17	3.86	.41			1.12
4.40		1.06	9.72	1.59			1.68
5.10	3.72	1.61	5.50		.62		
	9.11			.27			
8.24	5.45	2.45	4.00				
5.85	4.92	2.12	13.10	.38		1.87	3.34
10.05	9.65	3.07	4.59	.50			1.37
6.65	10.10		2.80				4.74
8.77	6.86	3.43	7.21	.28	.04		1.08

17(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
432-	.29	9.75			59.00		5.03
433-	1.59	5.78		3.56	51.70	8.10	
434-		4.14	3.37	3.52	64.10	.19	4.05
435-	1.15	6.25	1.53		56.40	.65	3.82
436-	.33	.76	2.42	17.18	56.20	.60	3.00
437-		1.11	5.34		60.77	1.96	1.86
438-		8.97	10.16	13.10	52.55	.27	.27
439-	.46	5.59	4.77	2.61	53.05	.01	1.72
440-	2.03	6.21		1.61	62.40	1.80	2.42
441-	.56	6.33	1.50	7.75	54.85	.05	1.29
442-	.65	4.63	2.29	4.61	59.45	2.88	2.43

17(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
6.25	5.37	3.46	8.69	1.53			.69
6.66	10.90	1.02	6.85	.83	.37	1.50	.88
5.11	5.93	1.19	7.88				.61
7.68	5.26	4.64	9.07	.36	2.78		.44
6.46	8.35	2.62	1.97			.45	
9.64	5.13	..91	5.65				8.51
9.88	4.28	.55				.01	
7.38	6.64	2.48	14.27	.42			.52
6.25	5.38	3.88	7.18	.19			.62
6.93	6.09	2.22	9.26	.21			2.96
7.48	4.34	3.33	2.79				5.12

The statistics mentioned in the discussion of Table III (Page 6) have been placed in a frequency table (Table IV). The figures in the vertical column at the left of the page are per cents and hundredths of per cent. The table should be read as follows: there are one hundred sixty eight cities which spend from one hundredth of one per cent to ninety nine hundredths of one per cent for the board of education, twenty four cases lie within the same percentile limits for the superintendent's office, and three school systems use less than one per cent of the total budget for the salaries of principals. Where the total of a column fails to equal 442, the remaining cases reported nothing for the item.

Table IV contains some very interesting information since it shows the variation among the several cities in regard to what percentage of the entire school budget is used for each item. We find that while 168 cities use less than one per cent of their school funds for the expenses of the board of education, one city uses more than twelve per cent. With the median and the limits of the middle fifty per cent (presented on page four of this table) in mind, we are able to judge whether these extreme conditions are justifiable. Since three fourths of the cases use not more than 1.72 % for the board, we are safe in saying that more than fifty cities are using too large a proportion of their school funds for this item; some of these cases are extreme. It is interesting to note that four of the worst offenders, 321, 341, 382, and 386, are in Pennsylvania (Archbald, Duryea, Swoyerville, and Throop). These and others such as (407, Corpus Christi, Texas, 213, Corinth, Mississippi, etc.) should be required either to show that they are

securing results which justify this extreme condition or else to conform more closely to what general practice shows to be a sufficiently large proportion.

Let us consider more thoroughly the conditions in some of these particular cases. Archbald, Pennsylvania, city 321, uses 12.40 % (Table III) of its school fund for the expenses of the board; this places it far above the upper limit of the middle fifty per cent of the cases for this item. It is above the safety zone for the promotion of health, but is below as regards supervision, teaching, and stationery, supplies, etc., and is within these limits for all other items reported. In this case the board has received an undue proportion of the school's funds while teachers' salaries have suffered seriously as have also stationery, supplies, etc., and salaries of supervisors; in other words, instruction has been neglected.

Duryea, Pennsylvania, exceeds the limits of the middle fifty per cent for the board, janitors, and maintenance, and is very low for salaries of teachers, supervisors, and superintendent, (nothing is reported for the last two items mentioned). The other cities mentioned above which were high for the board of education are below in two or more items most closely allied to instruction; that is, superintendent's office, and salaries of supervisors, principals or teachers. We can safely say that in each of these cases instruction has failed to receive the proper share of the school revenue while the board has had very much more than its share.

Twenty four cities use less than one per cent of the total school budget for the superintendent's salary and office expenses, five use thirteen per cent, and one extreme case allows this item

to receive more than one fifth. If we believe that none of the cases should vary farther from the median than do the middle fifty per cents, there are several cities which should increase their proportions for this item while others should make a reduction. The one city which is so extremely high is Mayfield, Kentucky, (126). An examination of Table III shows that this case is above normal (the limits of the middle fifty per cent) for janitors' salaries, fuel, and maintenance, as well as for the superintendent's office; it is normal for only two items, the board of education, and water, light, power, etc. and is very low for each of the other items including teachers' salaries which receives less than one third of the total. The extremely high proportion for the superintendent may be explained in part by the fact that nothing is reported for supervisors or principals; if we add the upper limits of the middle fifty per cent for these three items we have a sum of 21.58 which is very little higher than the percentage used by Mayfield for the superintendent's office alone. We are led thus to conclude that probably the expense for all of these items is included in column three. Even if this be true, however, the proportion is still too great for this table presents its data on a percentile basis; and consequently if several items are near the upper fifty per cent limit, other items must be correspondingly low. The really important objection to the distribution which Mayfield makes of its school funds is found in the fact that too large a share is used for janitors' salaries, maintenance, and fuel; this last is significant since Kentucky is a south central state having an abundance of coal. The most important items which suffer as a result of these extreme conditions are salaries of teachers, textbooks, stationery, supplies, etc., libraries, and

promotion of health. Efficient instruction depends in a large measure upon the items just enumerated; this is true especially of teachers' salaries.

Turning again to Table IV we note the variation for salaries of supervisors which is from less than one per cent to twenty four per cent. The lower and upper limits of the middle fifty per cent are 2.43 % and 5.73 % respectively; thus we see that four cases (one of which is 18 % above) are more than 11 % above this interval. An analysis of these individual cases (Newton, Kansas, 114, Oneonta, New York, 275, Coshocton, Ohio, 299, and Sayre, Pennsylvania, 379,) in Table III shows that while Coshocton is near the median for teachers' salaries each of the others is below the low fifty per cent limit for this item; Newton is the lowest with only 36.6 % of its school revenue devoted to the teachers. In two cases (114 and 299) the expense for the superintendent's office is low as are also the items in columns 7 to 12 inclusive. City 379 reports nothing for principals and number 275 is also low for this item as well as for stationery, supplies, etc., and nothing is reported for fuel. In these four cases, the items which have suffered most often are teachers, stationery, supplies, fuel, board of education, and next in order are salaries of superintendents and principals, textbooks, janitors, water, light, power, and etc., maintenance and health. The fact that in each of these cases either the superintendent's office or salaries of principals is low may account in part for the large proportion used for supervision; that is, a proportion of what should have been reported for the former items may, by mistake, have been included in the latter. In general since teachers, textbooks, stationery and supplies, have failed to

receive as large a share of the school funds as the lower limit of the middle fifty per cent in a number of instances noted, we may say that instruction has been neglected.

For the expense of salaries of principals we find a variation from one percent to thirty eight per cent. Since fifty per cent of the cases lie between 3.42 % and 8.80 %, it is plain that some of these conditions are very extreme. The three highest percentages for principals are found in Galena and Newton, Kansas, and Sulphur Springs, Texas, (Numbers 111, 114, and 413 respectively). These cities allow the teachers (Table III) 35.9 %, 36.6 % and 47.7 % respectively, and all are low for items 2, 3, 7, 8, 9, and 11. Two of these cities are above the upper fifty per cent limit for maintenance and two are above for salaries of supervisors. Instruction has suffered here through the teachers, the superintendent, textbooks, and stationery, supplies, etc.; other items such as the board of education, janitors' salaries, and water, light, power, etc. have also failed to receive a proper share of the school funds.

There are several instances of an extremely large proportion of the budget going to the teachers. Number 310, (Norwalk, Ohio) reports only one item (super.isors) other than column 6. City 79, (Bedford, Indiana) also gives its teachers ninety three per cent, but reports only two minor items besides the superintendent's office which has practically the same value as the median. Washington, North Carolina, (city 289) gives the teachers ninety one per cent but there is only one other item, the superintendent's office. Number 37, Albany, Georgia, also allows its teachers ninety one per cent, but there is nothing reported for 3, 4, or 5 and probably these items are included in column 6. These are all cities whose school expenses

have not been accurately classified.

On the other hand there are three cities spending less than twenty two per cent for their teachers. One of these, number 381, Swissvale, Pennsylvania, gives its teachers only 14.65 %, but allows the janitors 18.65 % and is considerably above the upper fifty per cent limit as to principals' salaries, textbooks, stationery, fuel, water, light, power, and maintenance. Dickson City, Pennsylvania, (339) which allows its teachers only fifteen per cent of the school funds, reports nothing for supervisors' or principals' salaries but gives the superintendent 13 % and is very high (Table III, P. 13 a and 13 b) as regards columns 7, 8, 9, 10, and 12. The third city is Brazil, Indiana, (81). Here the teachers receive twenty one per cent but water, light, power, etc. (notes in the original data show that items 9 and 10 are included in 11) receive more than twice as much, forty seven per cent. The salaries of superintendents, supervisors, and library expenses are above the fifty per cent limits for each of these items.

Two cities in Pennsylvania, Coaldale and Northampton, (333 and 372) are spending twelve and nine per cent respectively, of their school revenue for textbooks. In the former city the board, superintendent, stationery and supplies, and health, each receive more than the middle fifty per cent limits, while supervisors, principals, (in 333 teachers also) and minor items suffer. In the latter city other items approximate the medians where anything is reported, but nothing is given for the board of education, or for supervisors' and principals' salaries. In these cases the teaching, supervision, and principals' salaries have suffered because an unduly large proportion of the school revenue is spent for textbooks.

Two cities in California, Marysville and Santa Ana, (8 and 12), allow twenty one and twenty three per cent respectively to go for stationery, supplies, etc. and city number 253, Salem, New Jersey, uses one third of its school revenue for this item. In the latter case the percentages spent for the board of education, superintendent, principals, and teachers are quite low. In the two California cities the item for teachers' salaries is near the low middle fifty per cent limit in each case, but there is nothing reported for supervision. City 8 reports nothing for janitors and both are low as regards the superintendent's office.

Forest Park, Illinois, gives the janitors one fourth of the school funds but since it reports nothing for columns 4, 5, 7, 8, 10, 12, 14, 15, and 16, it is able to remain near the medians for the other items. Putnam, Connecticut, (number 30) spends 17 % for fuel while the teachers' and supervisors' salaries, and superintendent's office are too low. The city which uses 47 % of the school revenue for item 11, is number 81, Brazil, Indiana, and has been discussed in connection with the extreme cases in salaries of teachers. Of the five cities (numbers 259, 370, 511, 402, and 126) which stand highest for maintenance, three are below the low middle fifty per cent limit for teachers' salaries, one is a trifle above this limit, and the other which stands near the median reports only two other items: superintendent's office and supervisors' salaries.

In view of the conditions shown by these extreme cases, we may say that in general when one item is much above its median, measured on a percentile basis, the item which is most likely to suffer is salaries of teachers, and next in order we find items closely allied to instruction, such as salaries of supervisors or

principals and the amount spent for the superintendent's office. Many of the extreme cases evidently are due to the fact that a complete classification of the school's expenditure has not been made; in other words, the expense for several items has been reported in one of them. If we disregard all such cases, however, the variation between the proportions which different cities allow for each item in the school budget, is still too great. In most instances much better results will be secured by a city arranging its school expenditures so that the proportion for each item falls within the interval determined by the middle fifty per cent of the cases here studied.

In this discussion the writer uses the median and the upper and lower limits of the middle fifty per cent of the cases as bases for determining central tendencies. It is readily recognized that the average is not always a fair criterion since it is so greatly influenced by a few very extreme cases. Chance errors which may be present in the original data are thus prevented from exercising any influence upon the standards herein determined.

Table IV

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries and expenses of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance-repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payments to other schools, pensions, rent, etc.

Table IV

Showing the Number of Cities Which Use a Certain Percentage
of the Total School Revenue for Each Item.

Per Cents	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
.01-.99	168	24	3			76	43		5	83	12	138	133	33	81
1- 1.99	105	14	29	7		39	64	1	33	106	36	31	26	12	39
2- 2.99	19	10	47	23		69	73	9	56	64	43	10	5	16	17
3- 3.99	12	40	39	43		54	66	22	75	55	56	1	0	12	13
4- 4.99	5	67	26	21		23	44	48	76	17	51	10	1	8	7
5- 5.99	6	88	15	16		15	36	78	50	17	49	5	0	5	6
6- 6.99	1	73	13	14		7	14	80	36	15	31	2	0	5	2
7- 7.99	2	45	13	15		5	5	75	20	5	40	0	0	7	4
8- 8.99	1	20	9	9		3	8	50	11	7	27	0	0	2	4
9- 9.99	2	18	2	13		1	4	29	13	4	17	0	0	2	2
10-10.99	0	6	2	10		0	3	12	5	2	11	0	0	1	3
11-11.99	3	3	2	8		0	1	11	2	0	4	$\frac{1}{196}$	$\frac{1}{166}$	0	1
12-12.99	$\frac{1}{325}$	3	1	6		$\frac{1}{293}$	3	4	1	3	4			0	3
13-13.99		5	1	5			2	2	0	0	7			$\frac{2}{105}$	0
14-14.99		0	1	1	1		2	0	0	1	5				0
15-15.99		0	0	1	1		0	0	0	3	6				2
16-16.99		0	0	0	0		0	1	$\frac{1}{384}$	0	2				1
17-17.99		0	1	1	0		0	0		0	2				0
18-18.99		0	1	1	0		0	1		0	0				3
19-19.99		0	1	0	0		0	0		1	0				1
20-20.99		0	0	0	0		0	0		1	0				0
21-21.99		$\frac{1}{417}$	0	0	1		1	0		0	0				0
22-22.99			0	0	0		0	0		0	0				1
23-23.99			0	1	0		1	0		0	0				0
24-24.99			$\frac{1}{207}$	0	0		0	0		0	1				0

Per Cents	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
85-85.99					1										
86-86.99					1										
87-87.99					1										

91-91.99					2										

93 -93.99					2										
					<u>2</u>										
					442										

Medians and Limits of Middle Fifty Per Cent.

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
Medians	.97	5.61	3.64	5.28	61.90	2.46	3.09
Low 50 % Limit	.48	4.24	2.43	3.42	56.30	.96	1.78
High 50 % Limit	1.72	6.96	5.73	8.89	67.53	3.67	4.73

	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
Medians	6.68	4.31	2.08	5.13	.72	.63	2.50	1.36
Low 50 % Limit	5.33	3.03	1.13	3.20	.36	.32	.79	.59
High 50 % Limit	8.10	5.86	3.67	7.72	1.35	.93	4.75	3.46

We may now turn our attention to Table V which compares the results of the present study with the conditions which Dr. Strayer found in larger cities¹ a decade earlier. The variation in the percentages of the school's revenue which is devoted to the salaries of teachers, is presented for both of the investigations. We notice that Dr. Strayer's data show the cases distributed within narrower limits than is true in the other study. Two of his cities use from 26 % to 30 % of their school money for teachers and four use 73 %; the writer finds two cases which devote less than 20 % of their school money to salaries of teachers and four allow their teachers 91 % or more. We find further that Dr. Strayer's "safety zone"² covers a range of only eight per cent while ours has a range of eleven and one half per cent. It is evidently safe to say that there is greater variability in the smaller cities. There is practically no difference between the two medians, and the safety zone determined by Dr. Strayer lies entirely within the limits of the middle fifty per cent indicated by the present study. Therefore we may conclude that although the central tendencies are actually a little lower in the latter case, they are identical in both investigations for all practical purposes. A graph which presents the same information as Table V is included; this shows readily the relationship which exists between the two studies as to teachers' salaries. The cases studied by the writer present very nearly a normal curve of distribution, and Dr. Strayer's curve is very similar.

(1) City School Expenditures, P. 47.

(2) This term (borrowed from Dr. Bobbitt) is used to designate the limits of the middle fifty per cent.

Comparison of Variability in Proportion of Total School
Revenue Used for Teachers' Salaries.

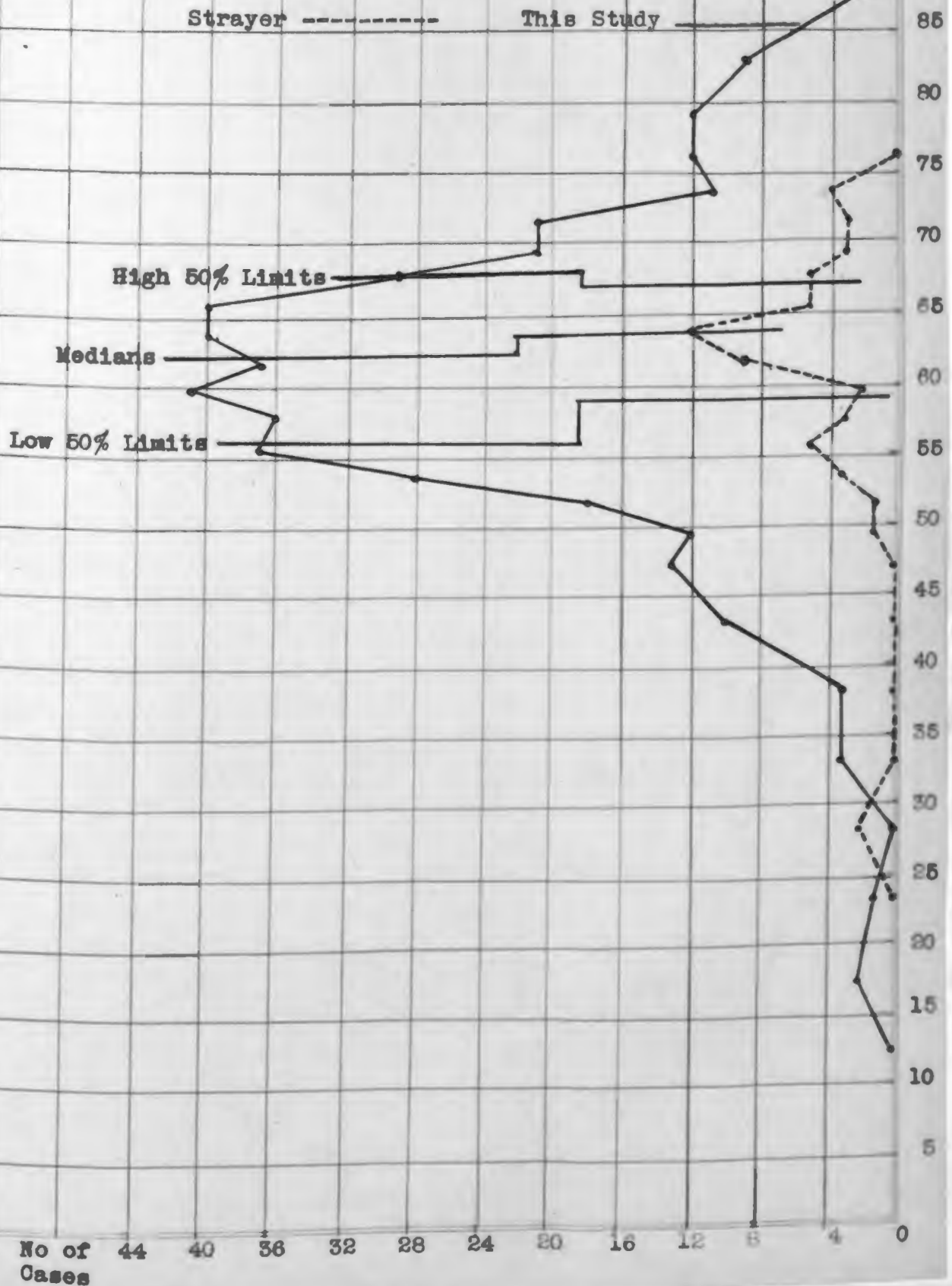
Table V

Per Cent	Strayer (P. 47)	Frequencies	This Study (Table IV)
14-20			3
21-25			1
26-30	2		0
31-35	0		3
36-40	0		3
41-45	0		10
46-48	0		13
49-50	1		12
51-52	1		19
53-54	3		28
55-56	5		37
57-58	3		38
59-60	2		41
61-62	9		37
63-64	12		40
65-66	5		40
67-68	5		29
69-70	3		21
71-72	3		21
73-74	4		11
75-77			12
78-80			12
81-85			9
86-90			2
91-93			4
	<hr style="width: 50px; margin: auto;"/> 58		<hr style="width: 50px; margin: auto;"/> 442

Medians and Safety Zone.

	Strayer	This Study
Medians	66.44	61.90
Low 50 % Limits	59.00	56.14
High 50 % Limits	67.00	67.69

Comparison between Strayer and this study, of variability
 in percentages of total school revenue used for teachers'
 salaries.



In Table VI we have a similar comparison of the two studies as to janitors' salaries. The earlier work shows four cities wherein the janitors receive three per cent of the school revenue, two cities in which they get nine per cent, and one case, separate from the others, indicates that it is using one dollar out of every seven for the janitors. The present study shows a variation from one to twenty five per cent for this item. In this case the low limits of the middle fifty per cent are almost exactly the same, but the upper limit for this study is a little more than one per cent above the one determined by the earlier work. The safety zone covers 1.65 % for the larger cities and 2.77 % for the smaller cities. The medians vary only half of one per cent, however, and the fact that our report includes "other employees" with janitors may account for even this slight variation. Be that as it may, the central tendencies again are very similar.

Table VI

Comparison of Variability in Proportion of

Total School Revenue Used for:

Janitors' Salaries

Per Cent	Strayer (P.47)	Frequencies	This Study (Table IV)
1			1
2			9
3	4		22
4	6		48
5	15		78
6	19		80
7	7		75
8	3		50
9	2		29
10	0		12
11	0		11
12	0		4
13	0		2
14	1		0
16			1
18			1
25			1
Total ---	<u>57</u>		<u>424</u>

Medians and Safety Zone.

	Strayer	This Study
Medians	6.19	6.68
Low 50 % Limits	5.28	5.33
High 50 % Limits	6.93	8.10

A comparison in regard to the percentile expenditures for fuel (Table VII) shows just what we should expect because of the geographical location of the cities from which the original data were secured. The entire variation in the present work is greater, but the chief difference lies in the fact that the writer finds a considerable number of cases using a less percentage for fuel than in the earlier study. Likewise our median and safety zone are lower than Dr. Strayer's. The explanation for this lies in the fact that the cities studied by the writer are distributed over the whole United States while the other investigation includes only cities in five North Atlantic states.

Table VII

Comparison of Variability in Proportion of

Total School Revenue Used for:

Fuel

Per Cent	Strayer (P. 47)	Frequencies	This Study (Table IV)
Less than 1			5
1			33
2			56
3	6		75
4	12		76
5	10		50
6	11		36
7	4		20
8	3		11
9	3		13
10	2		5
11	0		2
12	1		1
16	2		1
Total	54		384

Medians and Safety Zone.

	Strayer	This Study
Medians	5.91	4.31
Low 50 % Limits	4.62	3.03
High 50 % Limits	7.38	5.86

Table VIII shows a greater variability in the cost per pupil expressed in dollars in the present study than was found in the larger cities a decade before. The median and the safety zone are both higher in this later work, and the interval between the upper and lower limits of the middle fifty per cent of the cases is three per cent greater. The variation is greater then, in the smaller cities, and the cost for each individual educated is also higher. In regard to the situation just mentioned, it is the opinion of the writer that the time is a more plausible explanation of the increased pupil cost than is the size of the city. In all probability the cost per pupil is greater today than ten years ago in cities of ten to fifty thousand people; in other words, this change is more or less common to all schools rather than only to the smaller ones. The increased cost per pupil may probably be due to several causes such as, the introduction of new subjects into the curriculum, more expensive apparatus and equipment, etc., as well as better trained, and for that reason more expensive, persons to take charge of the administration and supervisory positions. The salaries of the teacher have also advanced to a considerable extent during the last ten years.

Table VIII

Comparison of Variability in Number of Dollars Used for Each Pupil,
The Average Daily Attendance Being Used as the Basis of Calculation.

Dollars	Strayer (P. 49)	Frequencies	This Study
7- 8	1		2
9-10	0		1
11-12	1		3
13-14	0		5
15-16	1		4
17-18	0		14
19-20	3		10
21-22	4		6
23-24	6		21
25-26	5		29
27-28	10		40
29-30	6		43
31-32	8		31
33-34	3		27
35-36	4		26
37-38	1		27
39-40	0		13
41-42	1		17
43-44	1		4
45-46	0		7
47-48	0		5
49-50	0		4
51-52	1		3
53-54	1		1
55-60			7
61-65			4
66-70			5
71-80			1
81-89			1
	<hr/>		<hr/>
	57		361

Medians and Safety Zone.

	Strayer	This Study
Medians	\$28.50	\$31.25
Low 50 % Limits	24.50	26.69
High 50 % Limits	32.30	37.53

Since the value of such investigations as Dr. Strayer's City School Expenditures has been questioned¹ it may be well to say a few words here in support of his work. If this study can but prove conclusively that such pioneer efforts in the field of finance in education are of real value, that the results and conclusions which grew out of them are valid and dependable, the writer will feel that the time and effort expended upon it have been well worth while. A close examination of Table IX which compares the medians and the limits of the safety zones shows a high degree of agreement. So far as the medians alone are concerned the graph (based upon the statistics of Table IX) probably shows more readily than any other means the conditions which exist. There is only one point of marked variation (salaries of supervisors) although two others are worth of notice. Let us dispose of the two minor items first. One of these, fuel, has been already explained as due to the difference in geographical location. Concerning item 0 (on the graph) Dr. Strayer reports this only as "supplies" (which are closely related to textbooks) and he reports other items such as printing and advertising, miscellaneous expenses, and postage, etc., any one or more of which may easily contain some of the expense here included under the head of stationery. This condition may indicate, and probably does in part at least, that schools are more generously provided with such materials today than formerly. The condition may be due to a difference in the size of the city, but on account of the close agreement which exists in several of the percentages the writer is led to conclude that the size of the city is not the controlling factor; we believe that either of the possibilities

(1) Elementary School Journal, April 1917, Page 592.

above mentioned, or a combination of them, make a more plausible explanation.

In regard to the lack of agreement between the two studies for the item of supervision, it may be open to question as to whether the writer has not included more here than was the case with Dr. Strayer. His explanation¹ of what he includes in the term "salaries for supervision" shows that he includes salaries of "Superintendent, Assistant, Deputy, or Associate Superintendents, and Principals". It is possible and even probable, however, that in some cases a part of the superintendent's salary may be included under his second item, salaries for business administration. In addition, our classification comprises, "expenses" of principals, supervisors, and superintendent as well as salaries. In view of these circumstances it is impossible to make the item of supervision absolutely comparable in the two studies. In the opinion of the writer, his item for supervision (including the superintendents and principals, 14.53 %) is too large probably by half of the percentage for the superintendent's office which would leave a little more than eleven and a half per cent for supervision. Since that is four per cent higher than Dr. Strayer's median for supervision (7.62 %) we must admit that our data show a larger share of the school revenue, than was used in the cities studied earlier, to be devoted to this item. In general this would seem to show one of two things, either that smaller cities require a somewhat larger percentage for supervision, or that there has been a slightly greater emphasis placed upon it during the decade between the studies. It would seem probable, since the percentages used for each of the other items agree so closely, that the second of the probabilities mentioned above is the one

(1) City School Expenditures, Page 10.

which best explains the situation; in other words, there is probably a larger percentage of the school revenue devoted to supervision now than was the case ten or fifteen years ago. There can be little doubt that the comparatively slight differences which are found mark the progress which has been made during the last decade in the way of a better distribution of the school's funds. In the light of what has been said by way of explanation, and the more conclusive argument presented by the graph, there certainly can be no further questioning of the general validity of Dr. Strayer's work.

Table IX

Comparison of Percentile Medians.

	Strayer (P.66-67)	This Study (Table IV P.4)
Teaching -----	63.44 %	61.90 %
Supervision -----	7.62	
Office of Supt. -----		5.61
Salaries & Exp. Supervisors --		3.64
Salaries & Exp. Principals ---		5.28
		<u>14.53</u>
Textbooks -----	2.91	2.46
Janitors' Salaries -----	6.19	6.68
Stationery, Supplies, etc. ----	1.85	3.09
Fuel -----	5.91	4.51
Water, Light, Power, Janitors' Supplies, etc. ----		2.08
Maintenance -----		5.13
Repairs -----	3.92	
Furniture -----	.60	
Apparatus -----	.60	
	<u>5.12</u>	
Library -----	.49	.72
Miscellaneous -----	1.64	
Total ---(a)	<u>95.17</u>	<u>100.90</u>

(a) Dr. Strayer did not determine medians for water, light, power, janitors' supplies, clerk of the board, and several minor items. The omission of these items accounts for the fact that the sum of the medians does not approximate one hundred per cent.

Table IX (con't)

Comparison of Percentile Safety Zones.

	Strayer		This Study	
	Low Limit	High Limit	Low Limit	High Limit
Teaching -----	<u>59.00</u> %	<u>67.00</u> %	<u>56.14</u> %	<u>67.62</u> %
Supervision -----	3.21	11.38		
Office of Supt. ----			4.24	6.96
Supervisors' Salaries-			2.43	5.73
Principals' Salaries -			3.42	6.69
Textbooks -----	(b)		.96	3.67
Janitors' Salaries ---	<u>5.28</u>	<u>6.93</u>	<u>5.33</u>	<u>6.10</u>
Stationery, Supplies, etc.-----	(b)		1.78	4.72
Fuel -----	<u>4.72</u>	<u>7.38</u>	<u>3.03</u>	<u>5.86</u>
Water, Light, Power, Janitors' Supplies, etc.(b)			1.13	3.67
Maintenance -----			3.20	7.72
Repairs -----	(b)			
Furniture -----	(b)			
Apparatus -----	(b)			
Library -----	(b)		.36	1.35

(b) Dr. Strayer failed to give his frequency tables for these items and consequently it is impossible to determine the limits of the middle fifty per cent.

Note: Of the items in this table, only those underlined have any significance as a means of comparison.

100%
95

A Comparison of the Percentile Medians for Each Item.

90

Strayer ----- This Study =

85

M- Libraries

80

N- Textbooks

75

O- Stationery, Supplies, etc.

70

P- Fuel

65

Q- Maintenance - Repairs, Furniture, Apparatus

60

R- Janitors' Salaries

55

S- Supervision - Superintendent, Supervisor, Principals

50

T- Salaries of Teachers

45

40

35

30

25

20

15

10

5

M

N

O

P

Q

R

S

T

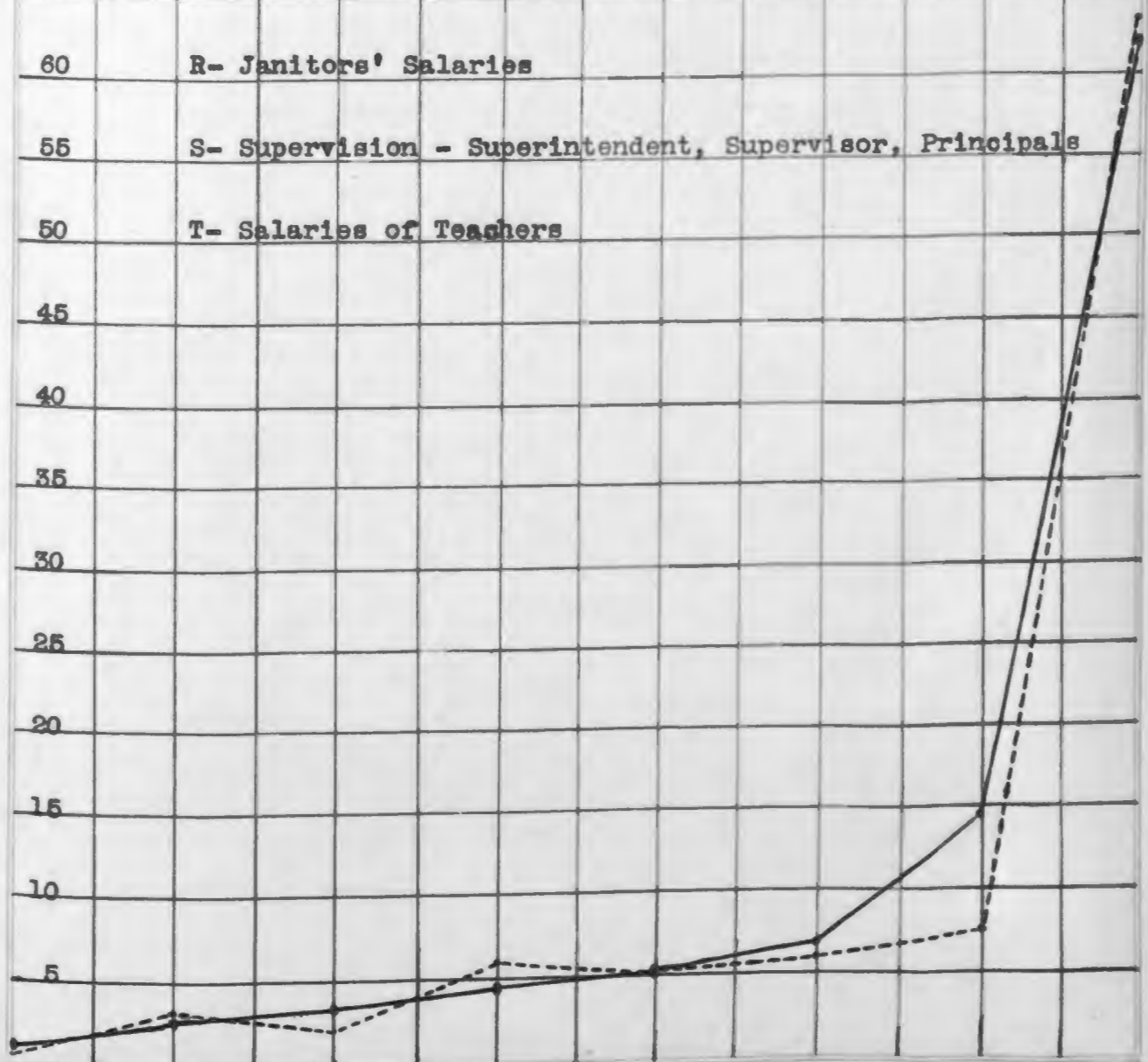


Table X shows the deviations from the medians for each of the four hundred forty two cities in regard to each item. A minus sign indicates that for that particular item that city is below the median while the absence of any sign shows a positive deviation. With the aid of Table XIII which gives all of the cities included in this study and their code numbers, it is possible to learn from the following table whether any city is above or below the median for each item and to how great an extent in either case. The data of this table are included largely because of the fact that they are the bases for tables eleven and twelve which follow.

Table X

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries and expenses of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies, and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance-repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payments to other schools, pensions, rent, etc.

Table X
Deviations from Medians.
1(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1-	- .97	3.09	1.84	- 5.28	- 1.32	3.15	5.01
2-	- .97	- 5.61	8.28	- 5.28	12.50	- 2.46	1.39
3-	- .97	4.12	- 3.84	- 5.28	7.10	- 2.46	9.87
4-	.11	4.34	- 3.64	- 5.28	10.80	- 2.46	- 1.85
5-	- .97	6.79	- 3.64	- 5.28	13.70	- 2.46	- 2.36
6-	.84	2.59	- 3.64	- .50	5.30	- 2.46	- 3.09
7-	.99	- .71	- 3.64	- 5.28	13.75	- 1.10	- .25
8-	- .97	- 3.33	- 3.64	5.30	- 6.90	- 1.24	18.61
9-	- .97	- 5.61	.38	- 5.28	11.80	- 2.46	- 2.61
10-	- .97	- 5.61	- 3.64	- 5.28	12.90	- .77	- 3.09
11-	- .97	- .03	- 3.64	- 1.31	16.30	- 1.18	- 3.09
12-	- .76	- 3.48	- 3.64	- 1.72	- 2.30	- 2.46	20.71
13-	- .18	.59	- 1.17	- 2.07	3.55	- 1.25	- .01
14-	.68	- 2.41	.01	- 2.39	4.70	- 2.46	.58
15-	.34	2.79	2.58	- 5.28	2.10	- 2.46	- 1.88
16-	.74	- 3.98	- 3.64	- 5.28	9.50	- 2.46	- 2.45
17-	- .25	- 1.09	3.34	- 5.28	4.00	- 1.80	- .88
18-	2.47	- .25	3.61	- 5.28	- 3.30	- .18	- 1.68
19-	- .97	- .52	2.40	3.67	- 5.40	- 2.46	.28
20-	- .62	1.59	- 3.64	- 5.28	6.75	- 2.46	2.11
21-	- .97	.36	- .01	- 5.28	2.90	- 2.46	.81
22-	- .81	- 1.35	- 2.51	- 5.28	2.90	1.73	- .98
23-	- .97	- 1.11	- 1.57	- 5.28	- .70	- .65	- .17
24-	.14	- 2.09	- 3.64	- 5.28	- 7.10	- .24	.49
25-	.66	- 1.80	- 3.64	- 5.28	2.10	.02	- .98
26-	- .11	- 1.32	- 2.13	- 5.28	1.70	- .06	.94

Table X
Deviations from Medians.
1(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- 3.84	- 4.31	1.74	- 1.26	- .72	- .63	- 2.50	- 1.38
2.98	- 4.31	.82	.27	- .72	- .63	- 2.50	- 1.38
- 3.05	- 3.88	- 2.08	2.49	- .72	- .63	- 2.50	.20
3.07	1.89	1.02	.76	- .72	- .63	- 2.50	- 1.38
- 3.96	- 2.90	- .29	.22	- .72	- .63	- 2.50	- 1.38
- 1.99	- 4.31	- .11	6.12	- .72	- .63	- 2.50	- 1.38
- .40	- 3.63	.24	- 3.38	- .05	- .16	- 1.64	- 1.12
- 6.68	.91	- 1.74	- 1.39	- .72	- .63	- 2.50	- 1.38
.47	- 2.97	- 1.18	- 3.34	5.59	- .63	- 2.50	- 1.38
- 1.33	- 3.70	10.04	- .45	- .72	- .63	- 1.75	- 1.38
- .91	- 2.77	- .84	- 2.71	- .72	- .63	- 2.50	- 1.38
1.32	- 4.31	- 2.08	- 5.13	1.98	- .63	- 2.50	- 1.38
- .98	- 2.76	4.19	- 1.72	.03	- .24	- 2.39	- 1.38
1.22	- .19	.61	- 1.93	- .72	- .63	- 2.50	- .94
- .46	- 1.40	.89	- 1.83	- .39	.32	- 1.67	- .85
2.51	1.89	- 1.19	3.12	- .72	- .63	- 2.39	- 1.18
- 1.05	- .21	- .28	.97	- .72	- .63	- 2.50	- .19
.15	- 2.88	2.48	.51	- .72	- .63	- 2.50	1.82
- .78	.09	.52	2.25	- .72	- .63	- 2.50	3.35
1.46	1.37	- 2.08	- 5.13	- .72	- .63	- 2.50	- 1.38
.42	- .81	1.44	- 1.73	- .72	- .08	- 1.66	1.89
- .16	.78	- 1.05	.62	- .14	- .14	.96	- .95
- .89	- 4.31	3.17	- 1.04	- .16	- .48	2.64	5.06
- 1.33	.81	- 2.08	- 2.52	- .72	- .63	6.80	10.75
- .97	- .57	- .99	.33	- .47	- .63	6.92	- .24
- .77	- 4.31	4.53	2.24	- .72	- .63	.51	.88

2(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
27-	.10	.01	- 3.64	- 1.08	- .60	- .02	- 2.82
28-	.69	.73	- 3.64	- 5.28	5.90	1.45	- .91
29-	.97	- 1.70	- 3.64	3.24	- 1.40	- .26	- 1.17
30-	.02	- 4.60	- 1.87	- 1.91	- 8.50	.48	.58
31-	.92	- 1.81	.66	- 5.28	- .40	- 2.46	1.06
32-	.44	- 5.61	1.39	- .25	- 3.30	2.57	- 1.88
33-	.13	- .58	.04	2.97	-10.50	2.31	- 2.69
34-	.57	1.09	- .83	2.82	2.10	.51	8.32
35-	.06	- 1.61	- 3.64	- .46	- .20	2.12	- .22
36-	- 1.91	.79	.19	2.92	- 9.90	- 1.84	- .95
37-	.56	- 5.61	- 3.64	- 5.28	29.30	- 2.46	- 1.22
38-	.21	4.23	- 3.64	4.12	3.60	- 2.46	- 1.17
39-	.97	4.52	- 3.64	- 5.28	21.50	- 2.46	- 3.09
40-	.32	7.54	.28	4.60	3.90	- 2.46	- 3.09
41-	.28	3.42	- 3.64	- 5.28	11.00	1.77	- .94
42-	.77	4.30	- 3.64	- 5.28	18.40	- 2.46	- 3.09
43-	.97	.92	- 3.64	- 5.28	17.70	- 2.46	3.41
44-	.38	4.24	- 3.64	- 5.28	17.05	- 2.46	- 3.09
45-	.65	5.80	- 3.64	5.57	4.40	- 2.46	- 2.01
46-	.35	2.08	- 3.64	- 5.28	20.40	- 2.46	- 3.09
47-	.11	1.71	- 3.64	- 5.28	7.40	- 2.12	- 1.21
48-	.34	- .86	- 3.64	- 2.53	2.20	- 2.46	- .96
49-	.41	1.26	.89	- 5.28	23.10	- 1.90	- 1.39
50-	.97	- 4.55	- 3.64	5.92	17.70	- 2.46	- 1.54
51-	.70	1.68	- 1.29	- 5.28	- .70	- 2.17	- .33
52-	.63	1.35	- 3.64	- 5.28	- 3.20	- 2.46	4.07
53-	.73	- 5.41	- 3.64	.27	1.70	- 2.46	3.60

2(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- .77	- 4.31	4.53	2.24	- .72	- .63	.51	.68
- 2.94	- 4.31	8.07	1.32	- .02	- .63	1.23	- 1.38
- 1.53	.31	- 1.98	.92	- .03	- .63	- .70	- .34
- 1.74	2.57	- 1.76	- 3.42	- .17	.07	1.65	- 1.38
- .13	12.69	- 1.17	- 2.63	- .72	- .57	- 2.50	- .05
- 1.88	- .17	- 1.17	5.07	- .21	- .63	1.30	1.74
- 2.40	2.39	- 1.25	- 4.28	- .67	- .59	4.61	2.59
- 1.08	- 4.31	4.72	- 2.35	.17	- .63	4.91	- .99
- .80	-.95	.04	- 3.49	- .72	- .63	1.96	- 1.37
- 1.78	1.99	- 1.57	- 1.60	- .32	- .59	1.71	- .25
- 1.04	.71	- 1.50	- .07	.08	1.97	1.27	- .76
- 4.90	- 3.04	- 2.08	- 3.26	- .72	- .63	- 2.50	.32
- 4.33	- 1.56	1.67	.69	- .72	- .63	- 2.50	- .65
- .86	- 4.31	- .46	- 5.13	- .72	- .63	- 2.50	- 1.38
- 3.72	- 2.01	- 2.08	- 3.82	- .72	- .63	- 2.50	- 1.38
- 3.17	- 3.42	.43	- 2.12	- .22	- .63	- 2.50	- 1.38
- 1.63	- 2.51	.66	- 5.13	- .72	- .63	- 2.50	- 1.38
- 4.55	- 3.01	- 1.87	- 3.21	- .54	- .63	- 2.50	- .73
- 2.44	- 1.45	- .46	- 3.26	- .72	- .63	- 2.50	- 1.38
3.42	- 1.60	.09	- 4.59	- .72	- .63	- 2.50	- 1.38
- 3.96	- 4.31	.63	- .93	- .72	- .63	- 2.50	- 1.38
.26	1.12	.35	2.74	- .72	- .63	- 2.50	- 1.27
2.78	- 4.31	6.02	2.87	- .72	- .63	- 2.50	- 1.38
- 6.68	- 4.31	- 2.08	- 5.13	- .72	.22	- 2.50	- 1.38
.31	- 4.31	- 2.08	- 5.13	- .72	- .63	- 2.50	- 1.38
1.30	- 1.92	- .75	5.82	- .15	- .32	- 2.50	- .53
.86	- 4.31	1.40	11.37	- .72	- .63	- 2.50	- 1.38

3(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
54-	1.52	.10	3.66	2.35	-21.30	- 2.46	- .07
55-	- .49	1.60	- 3.64	- 5.28	.80	- 2.46	- 3.09
56-	2.11	.42	- 3.64	2.33	- .40	.24	- 3.09
57-	.16	2.34	- .61	- 5.28	2.70	- 1.33	2.15
58-	.26	- 2.62	2.11	- 1.52	1.80	- 2.46	2.49
59-	- .97	- .71	- 3.64	- 5.28	- 2.90	- 1.97	- 1.08
60-	- .37	2.19	- 3.64	- 5.28	15.50	- 2.46	- .86
61-	- .19	6.14	- 3.64	- 5.28	3.50	- 1.08	- .62
62-	- .97	.14	- 1.82	- 5.28	10.10	- 2.46	.61
63-	.07	- 1.65	- 3.64	4.16	.91	- 1.63	- 3.09
64-	.77	- 1.20	- 3.64	- 2.66	1.70	- 2.36	- 1.46
65-	- .39	2.79	- 3.64	2.57	- .30	- 2.46	- 2.31
66-	- .61	1.32	- 3.64	- 5.28	5.60	- 2.00	- 1.43
67-	- .51	- .01	- 3.64	- 5.28	- 9.30	- 2.46	- .59
68-	.15	3.20	- 3.64	- 5.28	- 5.60	- 2.31	- 3.09
69-	- .06	1.47	- 3.64	- 5.28	3.60	- 2.21	- 3.09
70-	.09	1.34	1.84	- 5.28	- 3.60	- 2.29	2.07
71-	1.42	- .14	- 3.64	- 5.28	3.20	- 2.46	- .31
72-	- .97	- 1.80	- 3.64	- 1.87	4.10	5.42	- 3.09
73-	.43	3.00	- 3.64	- 5.28	1.20	- 2.46	- 1.05
74-	- .42	- .04	4.99	- 5.28	- 1.90	- 2.09	- 1.06
75-	1.56	1.03	2.44	- 5.28	- 4.40	- 2.38	- 2.67
76-	- .41	3.06	- 3.64	- 5.28	- 5.50	- 2.46	2.11
77-	1.58	- .50	- 3.64	- 1.69	2.60	- 2.46	- .38
78-	- .15	3.85	- .16	- 5.28	5.10	- 1.93	- 1.64
79-	- .34	.15	- 3.64	- 5.28	31.10	- 2.46	- 3.09
80-	- .48	1.16	.00	- .51	9.70	- 2.23	- 2.45

3(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
2.63	.39	1.86	8.22	.38	-.53	-2.50	-.95
18.62	-4.31	2.02	-5.13	-.55	-.63	-2.50	-1.38
.60	-4.41	2.63	1.08	-.46	-.54	-2.50	-1.03
.88	1.35	.95	-.60	-.35	-.63	-2.50	-1.38
2.03	-4.31	3.22	-3.28	-.72	-.63	-2.50	-1.38
2.52	3.24	3.56	5.77	-.72	-.63	-2.50	-1.38
-2.12	-.86	-1.48	-2.49	-.72	-.63	-2.50	-.57
2.05	-2.24	-.27	1.07	-.72	-.22	-2.50	-1.38
1.68	-4.31	1.24	-.65	-.72	-.63	-2.50	-.73
4.17	.04	2.36	-3.43	-.72	-.06	-2.50	-1.38
-.08	1.50	1.07	6.97	-.55	-.63	-2.28	-1.38
3.31	3.54	-2.08	-1.20	-.33	-.63	-2.50	-.20
-1.39	-4.31	.38	9.37	-.43	-.34	-2.50	-1.09
-.74	-2.39	28.62	-5.13	-.72	-.63	-2.50	-1.07
-.76	3.22	-2.08	4.10	-.50	-.55	-2.50	2.51
5.72	5.40	-2.08	-1.08	-.72	-.63	-2.50	-1.38
.98	-1.41	2.20	2.42	-.72	-.39	-2.50	-1.38
-.37	-.61	-1.67	1.59	.31	-.63	-2.50	-1.38
1.67	-1.31	1.93	-3.79	-.72	-.63	-2.50	.83
6.47	-.35	.87	.85	-.33	-.63	-2.50	-1.38
1.24	-1.87	.63	4.86	-.72	-.56	-2.50	-1.38
1.41	.04	5.39	1.67	-.53	-.63	-2.50	-1.38
-.36	-4.31	4.52	10.37	-.72	.10	-2.50	-1.38
-.03	.15	.87	2.02	.00	-.63	-1.94	-.80
.29	.34	.86	-3.68	-.72	-.63	-2.50	.07
-6.68	-4.31	-2.08	-5.13	-.72	-.05	-2.50	-1.38
-1.91	-1.98	-1.30	-1.77	-.72	-.29	-2.50	-1.17

4(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
81-	.52	8.29	3.51	2.17	-40.50	- 2.46	- 3.09
82-	1.79	.10	.56	- 2.23	2.60	- 2.46	- 1.11
83-	- .06	- .80	10.60	- 2.86	- 9.70	- 2.46	3.26
84-	- .16	- 1.14	.43	- 5.28	7.20	- 1.41	- 1.68
85-	1.38	- 1.32	- 3.64	- 1.43	.10	- 2.46	3.91
86-	- .24	.38	2.60	- 2.93	- .30	- 2.15	- 1.08
87-	- .09	- .99	- 3.64	6.42	16.30	- 2.46	- 3.09
88-	2.40	1.30	- 3.64	- 5.28	10.70	- 2.46	- 1.80
89-	- .52	.39	3.41	- 5.28	10.20	- 2.46	- 3.09
90-	2.49	- .40	- 1.26	5.12	- .10	- 2.10	- 1.86
91-	.22	.58	- 1.50	7.02	.50	- 2.01	- 2.61
92-	- .39	- .94	- 3.64	- 5.28	24.30	- 2.46	- 2.51
93-	- .39	- .01	- 3.64	- 5.28	8.40	- 2.46	- 3.08
94-	- .73	- .05	- 3.64	- 5.28	4.50	- 2.46	- 1.98
95-	.04	.33	- 3.64	.28	4.60	- 1.83	.42
96-	- .31	- 1.65	- 3.64	5.77	.80	- 2.46	2.08
97-	- .11	- .20	- 3.64	- 5.28	17.10	- 2.46	- 3.09
98-	.04	- .55	.92	- 1.99	7.80	- 2.46	- 2.90
99-	1.11	- 1.18	6.86	- 1.66	-18.50	- .62	3.61
100-	- .97	.19	- 3.64	- 5.28	- 1.90	- 2.16	- 1.99
101-	- .97	- 2.31	- 3.64	- .38	1.00	- 2.46	- .29
102-	- .47	- 1.21	- 3.64	- 5.18	2.00	- 2.36	.01
103-	.03	- 5.21	- 3.64	- 5.28	2.70	1.54	- 1.49
104-	- .97	.29	9.86	- 5.28	- 2.60	- 2.46	- 3.09
105-	- .87	1.09	- 3.64	- 2.08	4.60	2.64	- .70
106-	.03	.69	- 3.64	- 5.28	5.40	- 2.46	- 3.99
107-	- .97	- 1.71	- 3.64	- 2.58	8.70	- 2.36	.01

4(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- 6.68	- 4.31	44.92	- 1.77	1.07	- .63	- 2.50	- 1.38
.92	- 1.45	1.48	- 2.25	- .28	- .51	- 2.50	- 1.10
1.16	- 1.18	- 1.05	- 2.69	3.89	- .63	- 2.50	- 1.38
- .43	- 1.09	- .46	2.85	- .67	- .51	- 2.50	- 1.37
- .07	- 1.12	.30	2.22	- .72	- .02	- 2.50	-1.11
- 2.05	2.36	- 1.22	- 1.48	3.73	- .63	- 2.50	- 1.38
- 6.68	- 2.24	- 1.55	2.67	- .72	- .63	- 2.50	- 1.38
1.84	- 1.45	- .70	2.11	- .38	.35	- 2.50	- 1.38
- .28	- 4.31	4.12	- 4.53	.58	- .63	- 2.50	- 1.38
- .28	- .99	.20	- 2.69	- .72	.01	- 2.50	- 1.37
.80	- 1.75	1.52	- .02	- 2.70	- .38	- 2.50	- 1.38
- 1.07	- 4.31	.26	- 5.13	- .72	- .63	- 2.50	- 1.38
.32	2.84	- 2.08	3.81	- .63	- .31	- 2.50	- 1.37
- 1.25	- .50	6.23	3.17	- .41	- .63	- 2.50	- .90
- .48	- .73	- 1.26	1.57	.10	.01	- 2.50	- 1.38
.77	- 1.05	- 2.08	- .62	- .72	.52	- 2.50	- 1.27
- .30	- 2.31	.38	- 1.44	- .72	- .63	- 2.50	- 1.38
.73	.75	.56	- 2.98	- .72	- .63	- 2.50	- 1.38
3.93	.05	1.70	2.57	- .72	- .63	- 2.50	- 1.34
3.62	3.89	.62	- 2.43	- .42	- .23	- 2.50	6.82
- .38	1.01	2.32	.97	- .72	- .63	- 2.50	3.62
.92	1.99	8.62	- 5.13	- .62	.57	- 2.50	- 1.38
2.02	- .71	- 1.08	- 2.73	- .42	- .63	- 2.50	10.32
.92	- .11	.42	1.87	- .72	- .63	- 2.50	- 1.38
- 6.68	- 4.31	13.02	- 5.13	.28	- .63	- 2.50	- 1.38
2.52	2.49	1.52	.57	.28	- .63	- 2.50	- 1.38
1.12	- .21	.32	- .23	- .32	- .63	- 2.50	- 1.38

5(n)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
108-	.53	- 1.92	- 3.64	- 2.72	- 6.90	- 2.46	1.41
109-	.69	.51	- 2.13	- 2.72	1.70	- 2.46	.56
110-	.76	- 1.24	- 3.64	- 5.28	13.50	- 2.18	- 1.88
111-	.66	- 2.64	- .81	33.47	-25.95	- 2.37	- 3.04
112-	.07	- .28	- 3.64	- 5.28	6.50	- 2.20	.52
113-	.66	.64	- 3.64	4.92	- 6.40	- 2.46	2.12
114-	.97	- 4.91	20.96	24.72	-25.30	- 2.33	- 2.00
115-	.97	- .68	- 2.15	5.02	- 3.70	- 2.43	6.51
116-	.97	- 1.64	.15	- 5.28	4.10	- 2.46	- 2.07
117-	.97	- 5.61	- 3.64	- 5.28	21.80	- 2.46	.86
118-	.97	1.30	- 3.64	- 5.28	- 1.20	- 2.46	- 3.09
119-	.33	1.48	- 1.69	- 2.02	- 5.60	- 2.46	- 2.93
120-	.73	1.22	- 1.62	- .83	3.60	- 2.46	.71
121-	.02	7.44	- 3.64	- 5.28	9.10	- 2.46	- 3.09
122-	.88	2.26	- 3.64	6.03	8.50	- 2.46	- 1.94
123-	.97	3.99	- 3.64	4.32	2.10	- 2.46	- 3.09
124-	.76	2.15	- 3.64	- 5.28	7.40	- 2.28	- 2.33
125-	.91	- .49	- 3.54	7.57	- .40	- 2.46	- 3.09
126-	.28	15.49	- 3.64	- 5.28	-29.80	- 2.46	- 3.09
127-	.07	1.81	- .83	9.17	- 8.10	- 1.92	- 2.73
128-	.61	4.02	- 3.64	- 1.49	3.50	- 2.46	- .57
129-	.97	7.43	- .05	- 5.28	7.60	- 2.46	- 3.09
130-	.23	1.22	- 3.64	1.28	-10.90	- 2.46	- 1.90
131-	.97	- 2.47	-3.64	- 5.28	6.00	2.89	- 3.09
132-	.10	- 1.96	- 3.64	- 5.28	9.20	2.67	- 1.61
133-	.97	- 3.87	- 3.64	- 5.28	10.30	.58	- .92
134-	.97	- 3.59	- 1.95	- 5.28	- 5.90	1.17	2.22

8(h)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- .70	- 1.82	17.47	- 1.01	- .78	- .65	- 2.50	- 1.38
- 1.88	- .72	- 1.10	4.99	- .82	- .65	- 2.50	- 1.11
.78	.11	1.15	- 3.20	- .78	- .65	- 2.50	- 1.38
- .93	- 2.71	- 1.71	7.79	- .83	- .56	- 2.50	- 1.78
.39	- .57	- 1.04	4.33	- .71	- .62	- 2.50	- 1.38
1.58	- .61	.73	.86	- .72	- .65	- 2.50	.69
- 3.98	- 4.31	- 2.08	- 5.13	.64	.85	- 2.50	.75
2.27	- .55	- 1.65	1.07	- .72	- .65	- 2.50	- .74
5.67	.11	- 1.63	1.72	.38	- .65	- 2.50	- .74
- 6.89	- 1.09	- 1.13	1.88	- .38	- .65	- 2.50	- .54
4.48	- 1.11	.18	8.88	.73	- .47	- 2.50	- 1.38
1.37	- 1.36	13.32	.88	.79	- .62	- 2.50	- 1.38
- .77	- .26	.16	- .12	- .72	- .65	- 2.50	- 1.78
4.42	- 4.31	1.01	- 4.30	- .72	- .65	- 2.50	- 1.78
- 3.00	- 2.15	- 1.78	- 4.15	- .40	- .65	- 2.50	- 1.78
- 1.08	- .31	- .48	- 1.13	.08	.17	- 2.50	- 1.38
1.17	- 2.45	.61	4.17	- .72	- .65	- 2.50	- 1.78
- 1.63	- 4.31	- 2.08	10.37	- .72	- .65	- 2.50	- 1.78
6.67	1.63	1.91	10.67	- .72	- .65	- 2.50	- 1.78
.35	- 1.78	- .54	1.74	.00	.07	- 2.50	- 1.38
- 1.14	- 2.30	1.08	2.10	- .62	- .65	- 2.50	- 1.78
- 1.63	- .65	1.24	- 2.08	- .72	- .65	- 2.50	- 1.78
- 1.70	- .92	- 2.08	9.97	- .72	- .65	- 2.50	2.82
- 1.45	4.48	5.02	- 5.13	- .72	- .24	.70	- 1.38
- 2.17	2.76	- 1.67	- .65	- .72	- .65	- 1.60	- 1.38
- .82	4.01	- 1.65	- 1.31	- .72	- .65	- .18	- 1.38
- 1.78	2.85	1.40	9.07	1.72	- .65	- 2.50	- 1.38

6(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
135-	.81	.26	1.97	.07	5.60	.12	.23
136-	.97	.89	3.93	1.27	7.40	.63	5.74
137-	.65	.08	2.01	1.35	5.10	.72	1.24
138-	.97	1.38	3.64	5.28	5.90	.51	.43
139-	.79	3.65	1.95	3.79	.90	2.46	2.86
140-	1.23	.64	2.80	5.28	6.20	.23	3.09
141-	.71	3.65	.57	8.12	5.40	.87	1.31
142-	.12	2.33	1.07	5.28	5.10	3.20	3.09
143-	.88	.01	3.64	.17	12.20	1.49	2.88
144-	.43	.10	3.64	5.28	.10	.62	.13
145-	.32	1.28	.19	5.28	2.90	.70	.46
146-	.97	.95	1.50	5.28	5.40	.46	.67
147-	.88	.14	.50	8.42	6.50	.53	.05
148-	.97	5.61	3.64	5.28	14.40	2.46	3.09
149-	.66	1.72	1.02	5.28	.10	.10	.42
150-	.97	2.42	1.08	8.32	12.70	.95	1.34
151-	.05	.53	3.64	5.28	2.90	.63	2.09
152-	.97	1.65	.40	1.57	12.10	.88	7.21
153-	.52	2.24	2.27	5.28	6.80	.34	.11
154-	.15	1.03	4.86	5.28	12.30	1.61	2.62
155-	.70	.19	1.34	.83	5.90	.25	2.02
156-	2.84	5.61	.58	5.62	16.80	1.53	1.49
157-	.51	1.79	1.46	1.95	14.20	.88	.81
158-	.60	.01	.37	10.32	27.50	.36	.22
159-	.57	.25	3.64	5.28	.00	.82	.09
160-	.63	3.12	3.64	5.28	4.60	2.46	6.23
161-	.97	.31	3.64	5.28	11.80	.64	.05

s(h)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- 1.11	4.86	- 1.77	1.85	- .72	- .63	1.84	- 1.76
1.64	.30	- 2.08	- 3.58	- .72	- .63	- .66	- 1.76
1.08	3.57	.99	- 1.84	- .72	- .63	- .64	- 1.76
- 1.18	2.49	- 1.85	- 1.93	- .72	- .63	5.00	- 1.76
- 1.15	1.48	- 2.08	.38	- .72	- .60	5.61	- 1.76
- 1.76	1.48	.00	.04	- .72	.05	5.73	- 1.76
.89	4.74	- .06	- 5.13	- .72	- .01	- 5.50	- 1.14
.88	- 1.21	1.89	- 3.40	- .72	- .63	.92	- 1.76
2.07	1.88	.36	3.84	- .72	.21	1.08	- .87
- 1.89	1.74	.34	.78	- .72	.10	1.72	- .84
- 1.88	.86	- .67	1.32	- .72	- .82	2.00	.55
1.08	3.69	3.25	- 2.93	- .72	- .66	5.63	- 1.76
.48	.73	- .94	- 3.07	- .72	- .28	- 2.38	- 1.21
- 1.83	- 4.31	- 2.08	- 5.13	- .72	- .63	- 2.00	17.47
1.41	.36	- 1.15	2.01	- .71	- .63	.47	.87
- 1.47	- .61	1.62	- 5.31	- .72	- .35	4.38	5.17
.61	- 1.98	- 1.04	.83	- .72	.89	4.10	5.45
- 1.92	.88	- .42	- 1.91	- .72	- .60	7.90	- 1.27
- .86	- .46	- .82	- .89	- .72	.90	- 1.54	- .45
- .41	1.99	- 1.25	1.97	- .72	- .38	2.10	- .26
- .72	- .61	- 1.20	- 2.05	- .69	.19	2.15	- 1.76
4.41	- .47	2.22	- 1.84	- .72	- .16	1.88	- 1.76
1.32	2.34	1.44	2.21	- .72	.01	5.40	- 1.76
1.09	2.29	.74	- .58	- .67	- .25	11.20	- 1.76
- .18	2.61	- .23	- .16	- .39	.03	1.08	- 1.26
- .28	2.89	- 1.35	3.88	- .72	.28	- .17	1.22
- 1.13	.16	- 1.31	- 2.22	- .72	- .19	- 2.17	- .13

7(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
162-	- .62	- .40	- .08	7.02	-10.90	- .01	.19
163-	.14	- 1.92	- 3.64	1.42	- 1.30	- 1.53	1.41
164-	- .53	- .87	.38	- 1.49	-12.90	.28	- 1.17
165-	- .68	- .53	- .30	- 1.57	-11.00	1.45	1.07
166-	.04	- .18	- .06	5.77	-15.20	.55	.05
167-	.34	- 1.17	3.55	7.07	- 7.20	.50	.59
168-	- .85	- .58	- 1.34	- 5.28	- 3.50	.63	- 1.31
169-	- .97	.24	- .86	- 1.85	- 9.20	1.29	1.69
170-	- .65	- 1.23	- 1.86	- 5.28	4.40	.32	.42
171-	- .72	- 1.34	- .07	5.97	-13.40	1.19	1.33
172-	- .60	- 1.84	- 3.64	1.92	- 4.50	.24	.78
173-	.73	- 2.43	- 3.64	- 5.28	1.20	- .31	1.55
174-	.29	- 3.42	1.34	5.87	- 9.20	.34	.49
175-	- .97	- .51	2.16	- 5.28	- 5.60	- .37	- .07
176-	- .24	- .78	- .90	2.20	- 5.90	.06	.55
177-	- .58	2.52	- 1.72	- 5.28	- 1.60	1.71	- .65
178-	.58	- 1.49	1.17	- 1.50	- 7.00	1.24	.02
179-	- .61	- .21	1.77	- 5.28	- 2.90	- .22	.63
180-	- .85	- 1.66	- 3.64	- 5.28	- 1.40	.23	.62
181-	1.01	- 1.79	- 1.94	- .03	- 4.40	- .06	.50
182-	- .54	.14	- 3.64	- 5.28	1.10	- 2.46	- 1.94
183-	- .53	- 1.70	- 1.51	- 5.28	- 2.90	4.06	3.40
184-	- .07	.29	- 3.64	- 5.28	5.00	- 2.41	1.18
185-	- .97	- 1.87	- 3.64	- 5.28	3.50	- 1.27	.05
186-	.50	- 2.00	- 8.50	- 5.28	-18.10	- .09	- .60
187-	- .40	- .48	4.21	- 2.43	- 5.00	- 2.46	5.47
188-	- 1.30	.16	.42	- 2.14	- 4.50	- 2.46	1.31

$\tau(h)$

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- 1.08	1.48	- 1.79	- 0.80	- .78	.07	8.84	.47
8.07	.84	.74	- 8.88	- .87	.87	.10	- .98
- 1.47	8.80	.38	- .41	- .72	.01	8.19	- .78
1.87	8.03	8.81	.52	- .78	- .84	.89	- .47
- .38	8.88	- 1.91	- .87	- .72	- .11	- .84	1.84
.13	.89	- .70	.47	- .72	- .87	- 1.78	- .78
.77	8.29	.43	1.41	- .78	.80	- .01	- 1.73
- 1.11	8.89	- .10	- .08	- .72	- .18	8.08	- 1.81
1.08	1.08	.88	- 1.03	.09	- .81	- 8.89	- .87
1.18	8.88	1.10	- 8.88	- .84	- .80	- 1.84	.08
.83	8.84	.08	- 8.88	- .70	- .84	- 1.88	8.87
1.29	8.79	- 1.37	8.83	- .78	- .81	1.87	- 1.88
.80	8.88	- 8.08	- 8.84	- .71	- .88	- 1.88	8.18
8.88	8.40	.11	1.91	- .72	.88	.88	.88
8.88	.19	- .80	- 1.81	- .92	- .83	- .19	.18
- 1.80	1.88	- .01	- 8.01	- .78	- .81	8.80	- .88
.89	8.88	- 1.48	8.48	- .88	- .18	- 1.88	- 1.78
1.88	8.19	- .93	- 8.88	- .78	- .88	- 8.88	+ 1.88
8.77	1.87	- .78	- 1.88	- .78	- .48	8.89	- .18
.89	1.80	- 1.89	8.07	- .88	.78	- 1.88	- 1.88
- .70	.88	.82	10.07	- .84	1.18	- 8.80	- 1.88
.88	.84	- 1.11	8.88	- .88	- .88	- 8.80	- 1.88
- .88	.84	8.37	- 1.18	- .18	- .88	- 8.80	- .88
8.48	8.84	1.88	.88	- .84	- .88	- 8.80	- 1.88
.88	- 1.11	- .87	8.88	4.88	10.87	.84	- 1.88
- .88	- .78	.48	.87	- .18	- .88	- 8.80	- .88
- .18	8.89	- 1.37	1.08	- .84	- .88	- 8.80	.88

B(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
189-	4.17	- 5.61	- 3.64	- 5.28	3.40	- 2.46	1.81
190-	1.71	- 2.39	2.59	- 3.58	- 1.52	- .23	- .23
191-	- .21	- 5.18	- 3.64	- 5.28	3.45	- 2.46	5.19
192-	- .24	- 1.03	.05	- 5.28	- 5.05	- 2.34	- 1.14
193-	1.20	- 1.21	2.74	4.02	2.90	- 2.31	- .18
194-	- .81	1.23	- 3.64	- 5.28	5.30	- 2.46	- .53
195-	- .16	.46	4.78	- 2.05	- 7.10	- .85	- .39
196-	.37	- .72	- 1.44	- 2.79	.90	- 1.91	.15
197-	- .50	- 1.09	4.74	- 5.28	4.60	- .90	2.51
198-	- .43	- 5.21	.19	1.86	1.70	3.81	1.28
199-	- .33	- .03	- 3.64	- 5.28	5.40	- 2.38	2.16
200-	- .55	- .01	- .58	- 2.76	- 1.80	1.89	- .29
201-	.98	.99	5.10	- 1.12	- 9.20	- 2.11	- 1.45
202-	- .17	1.19	.68	- 2.88	- 5.80	1.04	- .49
203-	.73	1.69	.76	- .18	-11.50	.54	1.71
204-	- .97	- .81	.68	- 5.28	-20.20	- .18	5.81
205-	- .37	- .11	- 3.64	- 5.28	- 6.00	- .75	.01
206-	- .07	- .31	- 3.64	- 5.28	.40	- .98	3.41
207-	.43	- 2.41	3.76	- 2.48	- 5.80	- .06	1.51
208-	1.73	.19	- 1.94	- 2.48	-13.20	- .58	.61
209-	.23	5.19	- 3.64	- .08	.10	- 1.98	- 2.59
210-	.03	.39	- .44	.72	- 2.50	- .88	2.81
211-	.23	- .41	- .34	- 2.48	- 2.40	- .16	4.81
212-	- .97	2.89	- 3.64	- 5.28	20.10	- 1.71	- 3.09
213-	8.75	1.38	- 3.64	- 5.28	4.40	- 2.46	- 3.09
214-	- .97	2.14	- .78	13.20	- 7.60	- .23	- 1.76
215-	- .97	3.64	1.91	- .35	11.90	- 2.46	- 3.09

g(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
.67	6.39	- 2.08	- .95	.04	- .63	- 2.50	.33
- .50	.34	18.22	- 1.96	4.02	.50	- .02	- 1.38
1.08	1.91	- .68	2.85	- .26	- .44	- 2.50	- .37
4.89	4.78	.36	- .46	4.13	- .11	- 2.06	- 1.38
- .23	.45	.55	2.37	- .72	- .63	- 2.50	- .30
2.40	.23	3.40	- 2.35	.50	- .63	- 2.50	- 1.38
1.98	1.63	- .19	- 1.08	.63	- .01	- 2.50	- 1.38
3.03	1.29	- .12	- .40	- .50	- .63	- 2.50	- 1.38
- .83	- 1.58	.84	.72	- .33	- .44	- 2.50	- 1.38
- 6.68	- 4.31	- 2.08	- 3.16	.56	- .63	- 2.50	8.87
1.08	.59	- 1.01	- 1.71	- .33	- .63	- 2.50	1.21
1.12	2.34	- .16	4.29	3.55	- .63	- 2.50	- 1.38
- .12	.11	2.04	- .73	2.10	- .10	- 2.50	- 1.26
- 6.68	5.79	5.52	1.13	.68	- .63	- 2.10	- 1.38
1.62	.89	3.72	- 2.83	- .52	- .63	- 1.20	- 1.38
3.52	.99	- 2.08	12.47	.58	.17	- .20	- .59
1.02	1.59	1.82	3.17	- .72	.47	1.30	3.72
.82	2.29	1.52	.17	- .22	- .63	- 2.50	- 1.38
4.72	1.89	1.12	.97	.46	1.07	.00	- 1.38
2.22	4.79	- .58	3.97	- .32	.37	.20	- 1.38
.92	2.89	- 1.18	- 1.53	- .22	- .63	- 3.50	- 1.38
- .68	- .71	.52	- 1.43	- .72	- .63	1.60	- .38
- 1.18	.39	.72	- .13	- .32	- .63	- 2.50	- 1.38
- 3.96	- 2.44	1.82	- 4.76	- .72	- .63	- 2.50	- 1.38
- 2.03	- 4.31	- .27	3.82	.57	- .63	- 2.50	- 1.38
- 2.31	- 2.62	- 2.08	- 1.11	1.93	- .45	- 2.50	- 1.38
- 3.39	- 3.69	- 1.77	- 1.84	- .72	- .63	- 2.50	- 1.38

9(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
216-	.02	.65	.33	- 5.28	17.60	- 2.46	- 2.11
217-	.97	6.50	2.90	- 5.28	10.85	- 2.46	- 2.61
218-	.04	3.67	5.64	3.05	- 5.00	- 2.46	- .33
219-	.31	1.52	- 3.64	- 1.57	- 1.75	1.84	1.63
220-	.95	- .07	- .68	- 2.10	- 2.90	- 2.46	- .50
221-	2.52	2.96	.12	- 5.28	3.22	- 2.44	- 1.51
222-	.23	1.58	- .28	- 5.28	7.90	- 2.46	- 3.09
223-	.59	- 2.00	- 3.64	3.97	- 6.65	- 1.98	- 2.77
224-	.47	.74	- 1.97	- 5.28	- 4.60	- 2.05	1.92
225-	.04	.35	- 3.64	- 5.28	.60	- 2.21	- 3.09
226-	.50	.97	- 3.64	- 5.28	2.90	- 2.46	- 3.09
227-	.36	- .11	- 3.64	- 5.28	13.00	- 2.31	- 2.79
228-	.17	- .59	- 2.20	- 5.28	- 1.80	.74	2.61
229-	.50	- 1.63	- 3.64	- .82	- 5.70	- 2.46	7.51
230-	.39	- 1.43	1.87	- 1.54	- 4.10	.08	2.90
231-	.51	.38	- 3.46	- 5.28	3.10	3.68	1.51
232-	.69	- 5.61	- 3.64	6.07	- 3.40	- 2.46	2.52
233-	.39	1.84	- .30	- 5.28	- .60	.83	1.62
234-	3.64	4.96	9.16	4.31	-16.60	- 2.10	2.01
235-	.43	- 1.66	- 1.89	5.15	-12.70	- 2.46	- .01
236-	.97	.07	.90	- 5.28	- 2.20	2.90	2.79
237-	.17	1.39	1.36	- 1.27	- 7.10	2.64	.52
238-	.97	- 1.06	1.14	- 5.28	-10.91	- .25	.23
239-	.26	.25	- 1.64	- 5.28	-11.40	- 1.03	- 1.68
240-	.97	1.75	.16	- 5.28	- 8.60	1.17	- .43
241-	.38	- .06	.28	- 5.28	- 7.70	.43	- 1.07
242-	.97	- 1.48	- 3.64	- 1.12	- 7.50	.10	- 1.88

9(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- 2.89	- 3.11	- 1.30	- 3.68	- .09	- .63	- 2.50	- .94
- 2.32	- 2.86	- 2.08	- 2.71	- .72	- .63	- 2.50	- 1.38
- 3.19	- 3.15	- .53	1.26	- .72	1.89	- 2.50	- 1.38
1.63	- 2.34	1.23	- .05	- .26	- .63	- 2.50	- 1.38
- .51	- 1.74	- .78	8.27	.11	- .63	- 2.50	- .46
1.60	- 1.79	- .81	- 1.90	.52	- .63	- 2.50	- 1.38
- 1.24	- .86	- .21	- .42	.17	- .63	- 2.50	1.90
4.42	- .03	- .30	- .45	1.12	- .63	- 2.50	5.63
- .18	- 1.05	6.28	- 4.51	- .72	- .63	- 2.50	- 1.38
2.07	- .58	3.99	6.42	- .72	- .63	- 2.50	- 1.38
.46	.34	4.41	.12	4.09	- .63	- 2.50	- 1.38
1.01	- .73	- .57	.86	- .72	- .63	- 2.50	- 1.38
- 1.01	2.54	- 1.28	4.87	- .32	- .63	- 2.50	- 1.38
- .68	- 1.03	1.98	5.17	- .60	- .63	- 2.50	- 1.38
1.03	- .53	- 2.08	2.03	- .72	- .63	- 2.50	- 1.38
2.52	.29	- 1.16	- 2.06	- .72	- .63	- 2.50	- 1.38
- 1.58	.51	- 2.08	3.77	4.67	- .63	- 2.50	- 1.38
.92	- .32	- 2.08	- 2.48	- .72	- .63	- 2.50	3.72
1.52	.69	.24	- .58	- .72	- .10	- 2.50	- 1.20
2.98	- .16	7.47	5.17	- .72	- .20	- 1.73	.75
2.27	1.12	- 1.42	- 1.29	- .72	- .63	- 2.50	- 1.37
- 2.81	- .25	.46	3.57	- .72	- .63	- 2.50	- .79
- 1.13	2.39	- 2.08	3.77	- .72	.04	- 2.50	11.57
- 2.37	1.49	- 1.51	1.09	- .72	- .63	- 1.11	12.27
- 2.17	4.19	- 1.55	- 3.49	- .72	- .19	4.96	2.46
- .82	2.19	- 1.07	3.01	- .64	- .63	- 2.37	6.07
.69	.09	- 1.07	.37	- .72	- .63	11.35	- 1.03

10(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
243-	.97	.08	3.64	5.28	3.80	.44	1.30
244-	.03	1.41	3.64	5.28	6.60	.18	.73
245-	1.08	1.54	.79	1.32	.62	1.07	.66
246-	.11	2.79	3.64	5.28	9.80	.56	.64
247-	.75	.80	3.64	5.28	.30	.46	1.17
248-	.97	5.61	3.64	5.28	3.20	.67	10.21
249-	.52	.82	3.64	5.28	7.10	2.30	2.81
250-	1.40	.79	1.29	5.28	1.10	1.26	1.04
251-	2.15	5.61	4.39	.72	5.70	.05	1.71
252-	.29	1.81	.28	4.24	2.30	.25	.38
253-	.97	4.62	.05	5.28	27.90	1.67	28.91
254-	.03	4.98	2.82	2.23	1.60	.12	1.39
255-	4.37	3.22	3.64	5.28	3.70	4.88	2.02
256-	.64	1.09	2.58	1.24	9.90	1.01	.35
257-	.05	2.45	3.64	5.28	4.20	.52	.50
258-	.25	.90	1.98	1.25	6.50	.58	.21
259-	.97	.43	3.64	5.28	14.00	2.46	3.03
260-	.23	2.01	3.61	5.28	6.40	2.20	.30
261-	.04	4.44	.72	.44	2.45	2.46	1.06
262-	.97	1.73	4.21	5.28	3.60	2.46	.84
263-	.97	4.91	3.64	5.28	7.75	2.46	2.36
264-	.39	1.79	3.64	5.28	.94	.36	1.22
265-	.22	.13	3.64	2.03	4.42	2.33	.18
266-	.93	.60	.67	5.44	7.05	2.46	1.69
267-	.97	.97	.55	1.57	3.30	1.88	.10
268-	.97	.99	3.64	3.77	3.10	.86	1.05
269-	.48	.36	3.64	5.28	4.00	1.81	1.07

10(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
1.85	1.34	- 1.97	- 2.21	- .72	- .63	.75	- 1.38
- .80	- .14	- .22	- 1.37	- .72	1.03	- 2.50	- 1.38
.51	- 1.17	.43	- 1.72	- .60	- .28	- 2.18	- .57
- 2.31	- 3.07	.12	- 1.34	- .72	- .19	- 2.48	.11
- .52	- 1.02	- .42	4.86	- .08	.80	- 2.50	- .35
2.14	- .59	- .11	5.82	.31	- .63	- 2.50	- 1.38
- .52	- 1.89	- 1.17	- 2.11	- .72	- .05	- 2.50	- 1.38
1.44	- .56	.07	- .18	- .57	.31	- 2.50	- 1.23
.33	- .89	- .74	.05	.50	.49	- 2.49	- .16
.67	- .86	- 1.10	- 3.40	- .56	.00	- 2.50	- .35
- 1.12	- 1.49	1.21	- 1.84	- .67	- .63	- 2.50	- 1.38
- 1.08	- .09	- 1.19	2.37	- .67	.05	- 2.50	- 1.38
- .38	1.38	- 1.81	- 1.88	- .72	.38	- 2.50	- .85
1.57	- .21	1.31	3.23	- .70	-.61	- 2.43	- .09
- .63	- .25	- .47	.58	.37	- .00	- .24	1.41
- .40	- 1.42	3.05	.56	- .45	.19	- 2.42	- 1.58
- 1.86	5.54	1.23	23.71	- .25	- .14	- 2.50	- 1.38
.33	3.74	- .33	1.58	- .55	- .03	- 2.50	- 1.38
- .17	3.74	- .67	- 3.12	.08	- .63	- 2.50	- 1.38
- .66	1.45	- 1.29	- 3.03	.01	- .63	- 2.50	- 1.38
- 1.77	- 4.31	10.70	.46	- .69	.42	- 2.50	- 1.38
2.34	2.40	- .14	- 1.01	2.01	- .63	- 2.50	- 1.38
- .05	- 4.31	7.34	3.84	- .61	.77	- 2.50	1.56
- .43	- 4.31	3.62	.39	- .43	- .63	- 2.50	1.54
- 2.40	7.69	- 2.08	- 2.08	- .33	1.92	.76	.33
1.07	2.65	- 1.56	.55	- .20	- .15	- 2.50	- 1.38
- 2.03	2.72	.96	4.30	.13	.07	- 2.50	- 1.38

11(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
270-	- .97	.66	.20	- 5.28	9.80	- 2.46	- 1.46
271-	.00	.34	- 3.64	- 1.51	- 4.40	- 2.46	- 1.93
272-	.55	4.49	- 3.64	- 5.28	5.70	- .70	1.69
273-	- .97	.20	2.68	3.29	- 4.90	- 2.29	- 2.38
274-	- .97	- 2.20	- 3.64	6.54	- 9.40	- 2.46	- 1.22
275-	- .97	.81	13.91	- 5.28	- 9.40	- .40	- 2.38
276-	.55	- 1.82	- 3.64	5.27	- 3.40	- .75	- .97
277-	- .97	1.52	- 3.64	- .76	8.70	- 2.32	- 1.77
278-	- .97	3.16	.68	- 5.28	- 2.30	- 2.46	1.15
279-	- .97	2.01	- 1.38	- 2.71	-14.90	- 1.08	9.06
280-	- .97	1.57	- 3.64	- 5.28	5.30	.69	.53
281-	- .66	.67	- .94	- 1.34	- 3.70	- .71	- .05
282-	1.25	2.54	- 3.64	- 5.28	13.60	- 2.46	- 3.09
283-	.33	3.74	- 3.64	4.47	5.10	- 2.46	- 3.09
284-	- .97	1.99	- 1.36	- 5.28	11.10	- 2.46	- 3.09
285-	- .97	2.24	- 3.64	1.72	3.40	- 2.46	- .27
286-	- .50	2.64	- 3.64	- 5.28	8.60	- 2.46	- 2.75
287-	.51	.45	- 3.64	- 5.28	9.20	- 2.46	- 1.43
288-	.60	2.47	- 3.64	- 1.84	1.90	- 2.46	- 3.09
289-	- .97	2.69	- 3.64	- 5.28	29.90	- 2.46	- 3.09
290-	- .33	1.19	- 3.64	1.62	9.20	- 2.46	- .73
291-	- .17	5.89	- 3.64	- 5.28	5.60	- 2.19	- 2.01
292-	5.54-	- 5.61	- 3.64	- 5.28	5.60	.48	- 2.12
293-	- .97	.71	- 3.64	- 2.40	11.60	- 1.70	- 3.09
294-	- .97	- .36	- 3.64	- 5.28	4.50	- 2.46	- 3.09
295-	.57	2.24	- 3.64	- 5.28	15.50	- 2.46	- 3.09
296-	1.37	.79	- 3.64	- 5.28	12.20	- 1.60	1.22

11(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
.75	- 4.31	3.42	- .78	- .42	- .63	- 2.50	- 1.38
- 1.38	.37	5.53	4.79	- .27	2.01	- 2.50	- 1.38
- .50	- 1.47	- 3.60	.86	.13	- .19	- 2.50	- 1.38
- 1.92	- 4.31	13.67	- 1.79	2.24	- .63	- 2.50	- 1.38
- .13	.98	12.34	- 3.35	- .25	.31	- 2.50	- 1.38
- .68	- 4.31	5.19	.65	.05	.19	- 2.50	- 1.38
- 6.68	2.05	2.93	- 1.29	5.34	- .63	- 2.50	- 1.38
- 2.71	- 4.31	6.03	- 2.55	.53	- .63	- 2.50	- 1.38
1.70	- 4.31	2.75	2.65	- .71	1.42	- 2.50	- 1.38
- .81	.41	2.12	.24	- .46	.12	- 2.50	- 1.06
- 1.80	- 2.62	- .16	- 1.07	- .72	- .63	- 2.50	4.97
1.78	.06	- 1.04	2.41	.51	- .01	- 2.50	- 1.24
- 2.23	- 2.67	- .28	2.08	- .72	- .63	- 2.50	- 1.38
- 2.78	- 1.19	- .39	- 1.35	- .72	- .63	- 2.50	- 1.38
- 3.22	- 1.76	1.83	1.97	- .72	- .63	- 2.50	- 1.38
- 2.32	- .64	- 1.84	2.43	.56	- .63	- 2.50	- 1.38
- 3.10	- 1.22	- 1.60	2.37	- .72	- .63	- 2.50	- 1.38
- 6.68	- 4.31	2.52	7.37	- .72	- .63	- 2.50	2.21
- 3.04	- .86	- 1.13	.98	- .72	- .63	- 2.50	- 1.38
- 6.68	- 4.31	- 2.08	- 5.13	- .72	- .63	- 2.50	- 1.38
- 1.92	- .16	- .67	- .17	- .72	- .63	- 2.50	- 1.38
- .09	- 4.31	2.78	- 3.51	4.94	- .63	- 2.50	- 1.38
5.67	1.18	- .51	- .43	- .72	- .63	- 2.50	- 1.38
5.02	- 4.31	- 2.08	- 5.13	4.39	- .63	- 2.50	- .41
.82	- 1.37	.92	4.57	4.59	- .63	- 2.50	- 1.38
- 6.68	- 4.31	- 2.08	2.07	- .72	- .63	- 2.50	- 1.38
- 1.22	- .76	- .46	- 3.73	- .55	- .63	- 2.50	- 1.38

12(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
297-	- .79	1.96	- 3.64	- 5.28	15.60	- 2.46	- 3.09
298-	- .97	- .74	- 3.64	- 5.28	- 6.50	- 2.46	- 2.59
299-	- .71	- 4.35	16.91	2.88	- .70	- 2.05	- 2.95
300-	- .97	1.69	- 1.06	- 5.28	4.70	.60	- 1.35
301-	.50	.80	- 3.64	- 5.28	7.90	- 1.65	- .79
302-	- .97	1.37	3.76	- 5.28	1.10	- 2.03	- 2.65
303-	.58	.80	- 3.64	- 5.28	1.40	- 2.46	- 3.09
304-	.17	1.02	5.01	- 5.28	- .90	.74	- 2.41
305-	- .49	2.04	- 1.71	- 5.28	6.20	- 2.21	- 1.35
306-	- .44	- 1.35	- 3.64	- 2.91	- 1.80	- 1.62	- 1.60
307-	- .97	.60	.28	- 5.28	12.10	- 2.46	- 2.09
308-	- .97	3.49	- 3.64	- 5.28	11.90	- 2.46	- 3.09
309-	.36	.56	2.30	- 1.92	-10.00	2.76	- .00
310-	- .97	- 5.81	- 3.64	- 5.28	21.10	- 2.46	- 3.09
311-	- .97	1.94	- .05	- 5.28	1.90	- 2.46	- 3.09
312-	- .16	3.76	- 1.07	- .80	6.70	- 2.13	- 2.60
313-	.14	- .16	- 3.64	- 5.00	- 2.90	- 2.22	- 2.36
314-	.30	.59	- 3.64	- 5.28	3.10	- 1.63	- 2.59
315-	- .25	1.60	- 3.64	- 5.28	7.60	- 2.46	- 1.12
316-	- .97	2.78	1.07	- 5.28	1.60	- 2.46	- 3.09
317-	- .57	1.89	- 3.64	- 5.28	9.90	- 2.28	- 2.41
318-	.16	1.62	- 3.64	- .87	2.30	2.07	- 1.70
319-	.55	1.04	- 1.80	-2.02	- .40	2.49	- .57
320-	2.90	2.30	- 3.64	- 5.28	- .70	1.21	- .39
321-	11.43	.79	- 1.93	- 1.77	-11.70	- .53	- 1.99
322-	.50	1.24	- 3.64	- 5.28	4.10	.03	1.48
323-	- .14	1.42	- 1.14	- .29	1.95	1.79	- 1.42

13(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
324-	.34	- 5.60	.48	- .55	4.55	.91	1.86
325-	2.79	- 1.23	- 3.64	- 5.28	- 3.05	3.61	5.74
326-	2.91	- 4.98	- 3.64	- .38	- 5.15	2.15	1.05
327-	2.35	- 5.17	- 3.64	- .04	3.20	3.47	4.05
328-	.05	- 1.06	- 3.64	- 5.28	.60	.23	3.05
329-	4.24	- 5.29	.83	.82	-10.30	.26	1.79
330-	.11	- 5.61	- 2.44	- 5.28	2.10	.81	6.13
331-	.31	- 1.58	- 3.64	- 5.28	- .35	1.77	1.14
332-	.97	2.58	.25	.55	- 7.50	.32	2.47
333-	4.17	1.49	- 3.64	- 5.28	- 8.65	9.54	3.32
334-	.31	.90	- 3.64	- 5.28	6.80	.77	-.08
335-	.29	.84	- 3.64	- 5.28	3.13	.99	.29
336-	.46	- .39	- 3.64	- 5.28	1.55	.11	2.93
337-	.97	- 1.19	- 3.64	- 5.28	- 1.95	1.25	2.08
338-	.42	- .68	- 3.64	- 5.28	- 2.40	1.82	11.11
339-	.97	7.39	- 3.64	- 5.28	-46.90	5.37	10.55
340-	.27	2.07	.83	- 2.23	- 3.90	3.00	3.83
341-	10.53	- 5.61	- 3.64	- .11	-10.20	.87	-.19
342-	5.13	- 4.55	- 3.64	- 5.28	3.10	.34	- 1.57
343-	2.45	.89	- 3.64	- 5.28	- 5.60	-.42	.10
344-	.34	- 3.90	4.15	3.16	- 8.40	.26	- 1.59
345-	.88	- 5.46	- 3.64	1.69	-14.60	.81	.79
346-	.97	.62	- 3.64	2.99	- 6.70	-.26	-.31
347-	.29	- 1.77	- 1.60	- 3.22	-19.50	-.11	-.31
348-	.51	.15	- 3.64	- 5.28	- 7.00	1.49	3.61
349-	.06	.60	- 1.18	- 5.28	3.70	.38	2.06
350-	.31	.13	- 1.50	- 5.28	- 6.10	1.12	-.57

13(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
2.42	- 1.94	- 1.82	- 1.60	- .72	- .23	- 2.50	- 1.38
- 2.27	- .08	- .57	2.95	- .72	- .63	- 2.50	- 1.38
1.79	- 1.19	- .20	4.55	- .72	- .63	- 2.27	.30
- 2.34	- .31	- 1.53	- 1.08	- .72	- .63	- 2.50	- 1.38
1.82	1.01	1.23	.60	- .72	- .24	- 2.50	- 1.38
- .12	- 2.53	.99	.14	- .72	- .58	1.05	6.31
.09	1.56	3.01	- 2.61	- .38	.01	- 2.50	- 1.38
1.30	- 1.97	- .41	7.59	- .72	- .63	- 2.50	- 1.38
- 1.12	- 2.09	- 1.08	3.21	- .67	.20	- 2.50	- 1.38
1.28	- .63	- .98	3.20	- .21	1.30	- 2.50	- 1.38
.97	- 1.04	- .73	- 2.70	1.41	.01	- 2.50	- 1.38
2.59	- 1.15	1.20	.77	- .72	- .63	- 2.50	- 1.38
- .40	3.61	.47	2.29	.48	- .63	- 2.50	- 1.38
- 1.63	- .14	- 2.08	- 4.10	- .72	- .63	- 2.50	- 15.23
- 1.50	- 1.81	- .90	1.42	- .72	- .32	- 2.50	- 1.38
10.07	4.61	.98	9.97	- .72	.33	- 2.50	- 1.38
- .83	- 1.74	- 2.08	1.43	- .44	- .54	- 2.50	- 1.38
2.27	- 1.51	.03	3.91	- .72	.03	- 2.28	.24
- .33	- 2.08	3.82	2.47	- .72	- .63	- 2.50	.27
2.69	- 2.23	- .83	10.47	- .72	- .63	- 2.50	- 1.38
.92	- 1.85	- .69	.11	- .72	- .42	- 2.50	4.49
- .45	1.50	1.83	- 4.50	- .19	- .63	- 2.50	21.52
- 2.58	- 1.13	7.02	3.07	.10	- .63	- 2.50	- 1.38
- .18	- 2.99	3.92	- 3.05	- .72	- .63	- 2.50	27.12
2.98	- .40	2.12	5.37	- .72	- .63	- 2.50	- 1.38
- .38	- 1.31	- .32	.53	- .72	- .63	- 2.50	- 1.24
- .48	- 2.66	- 1.99	- 1.84	- .63	- .63	- 2.50	16.92

14(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
351-	- .32	1.09	- 3.64	- 5.28	.00	.87	2.79
352-	- .97	- 5.55	- 3.64	1.95	9.10	- .12	2.48
353-	, .97	- .68	- 3.64	3.75	-16.70	3.36	1.15
354-	- .47	- 1.34	2.30	- 2.74	-18.20	- .21	- 1.25
355-	- .02	.48	- 3.64	.48	-15.90	1.25	1.25
356-	- .97	- 3.59	2.64	- 1.70	- 7.90	1.56	2.12
357-	4.63	- 1.13	.64	1.32	-16.10	2.08	2.55
358-	- .26	- .82	3.31	- 1.33	-11.80	- 2.46	- .24
359-	.38	- 4.74	- 3.64	.85	- 2.80	3.20	1.98
360-	.95	.16	- 3.64	- 5.28	5.90	2.68	1.78
361-	- .73	- .05	- 3.64	- 3.48	- 8.70	5.68	6.81
362-	- .97	- 5.27	- 3.64	- 5.28	14.80	- 2.46	5.28
363-	1.83	.90	- 3.64	- 5.28	1.20	1.46	- .60
364-	- .97	- 5.61	- 1.43	- 5.28	6.60	2.09	2.08
365-	- .72	- .61	- 3.64	- 5.28	- 7.30	6.29	11.66
366-	.13	2.16	- 3.64	- 5.28	3.60	.98	1.51
367-	- .68	- .88	- 3.64	- 5.28	- 3.50	- .68	- .30
368-	.28	1.97	- 3.64	- 5.28	5.10	- .70	1.05
369-	3.79	2.76	- 3.64	- 5.28	- 4.50	.03	- 1.04
370-	1.00	- 1.16	- 1.21	- 3.82	-13.70	- .39	.17
371-	3.81	.29	- 1.41	- 5.28	- 7.70	.81	.39
372-	- .97	- .54	- 3.64	- 5.28	1.20	7.24	- 2.54
373-	6.45	.84	- 3.64	- 5.28	- 5.80	1.23	1.45
374-	- .47	- .71	- 1.56	- 5.28	2.90	2.04	1.20
375-	- .02	- 5.61	- 3.64	- 5.28	5.60	- 1.02	1.28
376-	.11	- 5.61	- 3.64	1.47	- 1.80	- .21	4.13
377*	- .97	- 2.16	- 3.64	- 5.28	16.10	2.95	- 2.72

14(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
2.33	- 1.63	4.42	- 1.61	- .72	- .63	- 2.50	- 1.38
.17	2.58	- 2.08	- 5.13	- .72	- .63	- 2.50	- 1.38
1.68	- .60	- 1.55	- 5.13	- .72	- .63	- 2.50	16.62
.27	- .06	10.32	- 1.29	2.66	- .63	- 2.50	6.62
2.67	- .02	1.12	11.12	- .72	- .63	- 2.50	- 1.38
- .85	.34	- .16	.19	- .72	- .63	- 2.50	5.62
2.87	- .01	- .93	2.02	- .72	- .63	- 2.50	1.38
- .26	- 4.31	2.26	- .37	- .72	- .63	- 2.50	13.72
- .73	1.09	- 1.41	3.86	- .18	- .26	- 2.50	- 1.38
- .92	- 2.23	1.21	.07	- .55	- .32	- 2.50	- 1.38
- .28	- 1.40	- .71	4.97	- .72	- .33	- 2.50	- 1.38
.74	- 1.05	- 2.08	- 2.72	- .72	.79	- 2.50	- 1.38
.58	- .44	4.47	- 1.80	- .72	- .63	- 2.50	- 1.38
4.27	- 1.21	- 1.58	- 1.61	- .72	- .63	- 2.50	.12
4.52	- 1.79	- 1.46	- 2.76	- .72	- .63	- 2.50	- 1.38
2.17	- 1.95	1.63	- 2.27	- .72	- .63	- 2.50	- 1.38
.29	- 2.55	4.59	9.17	1.57	- .63	- 2.50	- 1.38
- 1.40	- 1.31	- .17	3.02	- .72	- .63	- 2.50	- 1.38
- .73	- 3.21	- .12	1.92	- .72	- .03	- 2.50	6.97
- 1.03	- 1.63	- .91	21.47	- .72	- .63	- 2.50	- 1.38
- 1.73	- 2.94	3.27	8.37	- .47	.08	- 2.50	- 1.38
.85	.86	- 2.08	1.88	- .13	.56	- 2.50	- 1.38
1.52	1.42	- 2.08	- 1.32	- .72	3.48	- 2.50	- 1.38
- .43	- 1.96	- 1.24	3.10	- .72	- .41	- 2.50	- 1.38
3.42	- .14	3.25	- 2.05	- .72	- .63	- 2.50	1.51
.30	- .69	.97	3.62	- .72	- .63	- 2.50	- 1.38
- .03	- 4.81	1.46	- 3.44	- .72	.25	- 2.50	- 1.38

15(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
378-	4.65	- 4.78	- 3.64	5.67	1.10	.16	- .71
379-	.28	.01	14.91	- 5.28	-17.10	.51	.56
380-	- .25	- 4.62	- 3.64	4.07	- 3.20	1.67	- .51
381-	- .97	- 3.65	- 3.64	6.82	-47.25	5.02	8.98
382-	8.14	- 5.15	3.31	- 5.28	9.20	3.66	.77
383-	- .97	.59	- 3.64	- 5.28	8.30	- .83	.86
384-	- .13	.67	- .17	- 1.98	- 5.30	.43	5.46
385-	- .97	.46	- 3.64	- 5.28	5.20	.72	- .03
386-	10.68	.30	- 3.64	- 5.28	- 7.60	1.28	2.01
387-	- .97	- 5.61	- 3.64	- 5.28	1.40	- 1.03	.36
388-	- .16	- .66	- 3.64	- 5.28	- 2.50	4.96	- .89
389-	- .97	- 5.44	- 1.42	1.92	- 1.19	2.21	1.09
390-	- .97	- 4.57	- 3.64	1.62	- 4.20	1.09	2.42
391-	- .31	- 4.38	- 3.64	- 5.28	- 1.50	.18	2.98
392-	.41	- 1.21	- 3.64	- 5.28	7.00	- 2.46	2.54
393-	.00	- .68	- 2.99	- 5.28	- 4.90	- 2.46	1.89
394-	- .41	3.35	- 3.64	- 5.28	- 3.40	2.34	- 2.09
395-	- .25	.86	- 3.64	- 5.28	-10.80	- 2.46	.64
396-	.23	.24	- 3.64	- 5.28	- 3.70	.80	- 3.09
397-	- .97	1.23	- 3.64	- 5.28	- 2.50	- .98	7.31
398-	- .25	.89	- .76	- 5.28	1.30	3.03	- 3.09
399-	- .97	- .50	.76	- 2.66	- 3.80	- 2.46	3.82
400-	.18	- .89	- 3.64	.28	- .80	- 2.46	- 3.09
401-	- .97	- 5.17	- 3.64	- 5.28	22.60	- 2.46	- 3.09
402-	- .97	2.19	- 3.64	- 5.28	- 4.30	- .84	- 2.31
403-	- .97	6.69	- .36	- 5.28	6.60	- 2.46	- 3.09
404-	✓ .97	4.13	3.26	- 5.28	9.70	- 2.46	- 3.09

15(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
.32	.50	- 1.50	- 3.70	- .72	.13	- 2.50	- 1.38
- .71	.28	.02	2.05	- .72	- .63	- 2.50	- 2.18
3.67	- 2.31	- 1.17	3.19	- .72	.56	- 2.50	- .55
11.97	6.79	6.15	8.67	- .72	- .63	- 2.50	- 1.38
2.42	- .46	- 1.16	1.49	- .29	- .63	- 2.50	- 1.38
2.83	- 2.05	- 2.08	- 5.13	- .72	- .63	- 2.50	4.05
.74	- 2.45	- 1.60	1.67	- .72	- .63	- 2.50	2.54
1.83	- .04	- 2.08	1.94	- .72	- .63	- 1.85	- 1.38
1.43	- .67	- 1.25	.94	- .72	- .63	- 2.50	- 1.38
2.84	1.63	- 2.08	1.27	- .72	- .63	- 2.50	- 1.38
.50	- 1.77	3.15	4.73	- .72	- .25	- 2.50	- 1.38
.18	4.68	- .60	- .97	- .72	- .63	- 2.50	- 1.38
3.62	- .21	- 1.35	.55	- .72	- .63	- 2.50	3.23
2.07	- .98	1.13	- .72	- .72	- .63	- 2.50	9.37
- .06	.49	- .40	1.52	- .72	- .63	- 2.50	- 1.38
1.32	2.11	.47	.73	1.00	- .63	3.66	- .63
- 3.12	- 4.31	4.07	- .43	- .72	- .63	- 2.50	11.34
- 1.03	- 4.31	6.08	2.75	- .72	.20	- 2.50	14.12
5.67	1.52	- 1.60	- 3.17	.16	- .63	- 2.36	8.57
2.66	.15	1.24	- .59	- .72	- .63	- 2.50	- 1.38
- .18	.96	- 2.08	1.97	- .72	- .63	- 2.50	.99
.41	- .14	.50	- 1.31	- .72	.11	2.55	- 1.08
- 2.58	- 2.28	1.65	7.52	- .72	- .63	- 2.50	3.57
- 3.48	7.54	- 2.08	- 5.13	- .72	- .63	- 2.50	- 1.38
- 3.52	- 2.14	- .86	20.07	- .33	- .63	- 2.50	- 1.38
- 4.09	- 1.71	3.20	- 2.19	- .26	- .63	- 2.50	- 1.38
2.17	- 4.31	- 2.08	- 2.10	- .72	- .63	- 2.50	- 1.38

16(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
405-	- .32	.92	.22	8.52	- 8.50	- 2.46	- 2.78
406-	- .65	- .50	8.21	- 5.28	.50	- 2.46	- 3.09
407-	10.18	- .27	- 3.64	- 2.07	2.70	- 2.46	- 3.09
408-	- .97	4.81	- 3.64	- 5.28	21.90	- 2.46	- 3.09
409-	- .97	.88	- 3.64	- 5.28	12.80	- 2.46	- 3.00
410-	- .97	- 1.38	- .98	- 2.42	9.20	- 2.46	- 3.09
411-	- .97	- 1.41	- 2.00	.08	9.60	- 2.46	- 3.09
412-	- .11	4.47	- 3.64	- 5.28	15.90	- 2.46	- 2.01
413-	- .97	- 5.61	6.31	18.52	-14.20	- 2.46	- 2.43
414-	8.01	- 5.61	- 3.64	- 5.28	16.90	- 2.46	- 3.09
415-	- .97	.59	- 3.64	- 5.28	22.10	- 2.46	- 3.09
416-	- .97	.00	- 3.64	- 1.07	18.50	- 2.46	- 3.09
417-	- .97	.34	- 1.94	.07	16.00	- 2.46	- 3.09
418-	- .97	- .16	- 1.91	- 5.28	- .90	1.87	- .12
419-	- .79	- 4.66	5.51	.76	-12.40	3.58	- .25
420-	- .95	4.03	- 3.64	- 5.28	- 2.40	.16	1.57
421-	- .25	- .42	- .28	- 5.28	- 7.30	.65	1.57
422-	- .68	1.94	- 3.64	- 5.28	- 2.80	- 1.29	1.42
423-	- .52	4.59	- 3.64	- 5.28	14.10	- 2.08	- .71
424-	- .97	.13	- 3.64	- 5.28	12.30	- 2.46	- 1.33
425-	- .20	- 5.61	1.00	3.99	6.10	- 2.46	- 2.47
426-	.15	- 3.00	- 3.64	- 5.28	25.10	- 2.46	- 3.09
427-	- 5.79	- .47	- 3.64	- .33	11.60	- 2.46	- 3.09
428-	- .56	- 1.50	4.36	- 3.95	-10.90	- .22	- 1.38
429-	- .05	- 2.47	- 2.49	- 5.28	- 1.40	- .65	- .08
430-	3.98	- 5.61	- 3.64	- 5.28	1.80	- 1.99	3.41
431-	.34	- .25	- .79	- 5.28	- 1.40	- 2.46	= .82

16(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
.37	3.52	.47	- 2.48	- .45	- .58	- 2.50	- 1.38
- 2.05	- 1.81	4.32	1.27	- .08	- .63	- 2.50	- 1.38
- 1.12	2.36	.82	- 5.13	- .72	- .08	- 2.50	- 1.38
- 1.58	- 4.31	- 1.85	- 4.66	- .72	- .83	- 2.50	- 1.38
.39	- 2.66	.92	1.88	- .72	- .83	- 2.50	- 1.38
- 1.39	- 1.13	- 2.08	5.47	- .72	- .63	- 2.50	- 1.28
- 2.36	- 2.91	- .79	- 4.86	- .72	- .63	- 2.50	- 1.38
- 2.53	- 3.67	1.16	- 2.97	.36	- .63	- 2.50	- 1.38
- .72	- 1.00	- 1.42	2.82	- .72	- .83	- 2.50	- 1.38
.52	- 2.81	- 1.98	- 3.29	- .72	- .83	- 2.50	- 1.38
- 1.77	- 4.31	1.28	- 3.58	- .72	- .63	- 2.50	- 1.38
- 3.45	- 4.31	3.18	- 3.79	- .72	- .63	- 2.50	- 1.38
- .56	- 2.61	- 2.08	- 5.13	- .13	.04	- 2.50	- 1.38
- 2.52	4.94	4.01	.14	- 1.72	- .63	- 2.50	- 1.38
- 1.48	.02	.46	4.05	- .18	1.18	- 2.50	1.22
- 1.78	2.04	.34	- 2.23	- .72	- .63	1.75	1.57
- 2.35	- 2.24	- .06	2.77	- .72	- .63	.26	3.33
4.47	5.81	.38	- .81	- .72	- .83	- 2.50	- 1.38
- 2.84	- 3.18	- 1.91	- 1.27	- .31	- .83	- 2.50	- .16
- 2.28	- 4.31	- 1.02	4.59	.87	- .63	- 2.50	.30
- 1.58	- .59	- .47	.37	- .72	- .01	- 2.50	- 1.38
- 6.68	4.80	- 2.08	- 5.13	- .45	- .83	- 2.50	- 1.38
1.56	1.14	.37	- 1.13	- .72	- .63	- 2.50	- 1.38
- .83	.61	.04	7.97	- .74	- .63	- .83	1.96
3.37	5.34	.99	- .54	- .22	- .63	- 2.50	- .01
- .03	5.79	- 2.08	- 2.33	- .72	- .63	- 2.50	+ 3.36
2.09	2.55	1.35	2.08	- .44	- .69	- 2.50	- .30

17(a)

Cities	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
432-	- .68	4.14	- 3.64	- 5.28	- 2.90	- 2.46	1.94
433-	.62	.17	- 3.64	- 1.72	-10.20	5.63	- 3.09
434-	- .97	- 1.17	- .27	- 1.76	2.20	- 2.27	- .96
435-	.18	.64	- 2.11	- 5.28	- 5.50	- 1.81	.73
436-	- .64	- 4.85	- 1.22	11.90	- 5.70	- 1.86	- .09
437-	- .97	- 4.50	1.70	- 5.28	- 1.13	- 1.40	- 1.23
438-	- .97	3.36	6.52	7.82	- 9.35	- 1.19	- 2.82
439-	- .51	- .02	1.13	- 2.67	- 8.85	- 2.45	- 1.37
440-	1.06	.60	- 3.64	- 3.67	.50	- .66	- .67
441-	- .41	.72	- 2.14	2.47	- 7.05	- 2.41	- 1.80
442-	- .32	- .98	- 1.35	- .67	- 2.45	.42	- .66

17(b)

<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
- .43	1.06	1.38	3.56	.81	- .63	- 2.50	.69
- .02	6.59	- 1.06	1.72	.11	- .26	- 1.00	- .50
1.57	1.62	- .89	2.75	- .72	- .63	- 2.50	- .77
1.00	.95	2.56	3.94	- .36	1.15	- 2.50	- .94
- .22	4.04	.54	- 3.16	- .72	- .63	- 2.05	- 1.38
2.96	.82	- 1.17	.52	- .72	- .63	- 2.50	7.13
3.20	- .03	1.53	- 5.13	- .72	- .63	- 2.49	- 1.38
.71	2.33	.40	9.14	- .30	- .63	- 2.50	- .84
- .43	1.07	1.80	2.05	- .53	- .63	- 2.50	- .76
.25	1.78	.14	4.13	- .51	- .63	- 2.50	1.58
.80	.03	1.25	- 2.34	- .72	- .63	- 2.50	3.74

Let us look for a moment at the deviations from the percentile medians (Table XI) for the ten cities of Minnesota, numbers 202 to 211 inclusive. The pupil cost (in dollars) and the tax rate (in mills) have been included in this table in order that a more complete diagnosis of the situation may be made. The tax rates were obtained from the Report of the Inspector of State High Schools for the year 1913-1914. Four of these cities are located in the southern part of the state while the others are in the north; three of the latter are in what is known as the Iron Range district. We find only one case which fails to report any expenditure for the board of education, and the other, except three which are somewhat below the median, are above it. There are five above the median for the superintendent's office, but the latter deviations are greater. Three cities report nothing for supervisors, five are near the median, one is considerably below, and another uses twice the median proportion for this item. Again, three report nothing for principals' salaries, one is slightly above, and the remaining six are below the median. Two cases are but a mere trifle above the median for teachers' salaries while the others are below; three depart more than eleven per cent from the median. The worst offenders in this respect are two Iron Range cities which have an exceedingly high assessed valuation (although the tax rates are very low this would by no means balance the condition) and because of that it is no doubt possible for them to pay the teachers higher salaries than is ordinarily paid for a certain grade of work. One of these cases, Chisholm, (number 204) which is farther from the median than any other of the group for column six is very much above (12.47 %) the median for maintenance. In this case it ought to be possible to

reduce the expense of maintaining the system and thereby lessen the total expense; that is, the expenditure for the maintenance which is in excess of the median, probably is unnecessary expense, or else the plant is old, inefficient and in poor working condition. The latter may very probably be true for this particular city was in the midst of extensive building operations during the year in which these statistics were gathered. The Minnesota cities are generally below the median in regard to textbooks, but are above for columns 8, 9, 10, 11, and 12. This is, of course, the condition which we should expect for fuel, (column 10) since these cases are in the north where artificial heat is needed for a longer period each year than in cities farther south. There seems to be no good reason why water, light, power, and maintenance (columns 11 and 12) should be above the medians. We find that for libraries and health these cities of Minnesota (Table XI) are grouped rather uniformly both above and below the medians. The tax rate varies from less than one mill, in one of the Iron Range cities which has an assessed valuation of nearly one hundred twenty four millions dollars worth of property, to over thirty mills with an assessed valuation of two million. The cost per pupil varies from \$29.40 to 89.20 which places all of them except the first above the median(\$31.25) for the country at large and more than half of them above the upper limit of the middle fifty per cent as shown in Table VIII. In two instances, Eveleth and Hibbing, (207 and 208) the pupil cost is \$67.48 and \$89.20 with a tax rate of 6.1 and 0.9 mills respectively. It would seem, if we believe in the doctrine of the state furnishing as nearly as possible equal elementary and secondary educational opportunities to all of its youth, that we should expect such cities to contribute

generously to a fund for the aid of poorer communities. To sum up, we find Minnesota decidedly below the medians for the salaries of principals and teachers as well as for percentile expenditure for textbooks, and above for the ordinary running expenses such as stationery and supplies, janitors' salaries, fuel, water, light, power, and maintenance; that is, the expense for running the school system is high and in consequence the items more closely related to instruction must suffer. On the other hand the Gopher State is considerably above the standard as indicated by the median cost per pupil.

Table XI

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries and expenses of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies, and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance - repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payments to other schools, pensions, rent, etc.

Table XI

Deviations for Minnesota Cities.

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>		
Medians	.97	5.61	3.64	5.28	61.90	2.46	3.09	6.68		
Cities										
202-	-.17	1.19	.66	-2.28	- 5.80	1.04	-.49			
203-	.73	1.69	.78	-.18	-11.50	.54	1.71	1.62		
204-		-.81	.66		-20.20	-.16	5.61	3.52		
205-	-.37	-.11			- 6.00	-.76	.01	1.02		
206-	-.07	-.31			.40	-.96	3.41	.82		
207-	.43	-2.41	3.76	-3.48	- 5.40	-.06	1.51	4.72		
208-	1.73	.19	-1.94	-2.48	-13.20	-.56	.61	2.22		
209-	.23	5.19		.08	-.10	-1.96	-2.59	.92		
210-	.03	.39	-.44	.72	- 3.50	-.56	2.61	-.68		
211-	.23	-.41	-.34	-2.48	- 2.40	-.16	4.21	-1.18		
	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>		Pupil	Tax
Medians	4.31	2.08	5.13	.72	.63	2.50	1.38		Cost	Rate
Cities										
202-	5.79	5.52	1.13	.63		-2.10		\$26.43	16.9	
203-	.89	3.72	-2.83	-.52		-1.10		33.68	20.0	
204-	.99		12.47	.58	.17	-.20	-.59			3.8
205-	1.59	1.82	3.17		.47	1.30	3.72	37.98	14.1	
206-	2.29	1.52	.17	-.22	-.65			43.45	20.1	
207-	1.69	1.12	.97	.42	1.07	.00		67.48	6.1	
208-	4.79	-.58	3.97	-.32	.20	.20		89.20	.9	
209-	2.89	-1.18	-1.53	-.22		-1.60	-.38	29.40	18.7	
210-	-.71	.52	-1.42					48.16	15.0	
211-	.39	.72	-.13	-.32				37.05	11.7	

Table XII presents for Iowa, data which correspond to the table just presented for Minnesota; the tax rates were secured from the Iowa Educational Directory for the school year 1913-1914. As we turn our attention to Iowa we notice that the negative deviations while equal in number to the positive, as regards the board of education and superintendent's office, are nevertheless greater in degree; in other words, the deviations which are below, depart farther from the medians than do those which are above. Only one city, Fort Madison, (104), reports anything for supervision and that case is nearly ten per cent above its median; this city is also one of the two cases below the median for for teachers' salaries, and fails to report anything for eight of the fifteen items. For salaries of principals the Iowa cities which report anything are below the median, while for teachers' salaries all except two are above, but not to any marked extent as the greatest deviation is 8.70. The expense for stationery and supplies is as uniformly below the median as the percentile expenditure for janitors' salaries is above its central tendency. Fuel is somewhat above the median in most cases but ^{not} to so great an extent as we might expect since Iowa is one of the northern states; the lowest cases are located in the coal mining region, which may account for the comparatively low percentage for fuel. All except one of these cities are above the median for water, light, power, janitors' supplies, etc., and two cases have a deviation of 8.62 and 13.20. For maintenance the cities are about evenly divided as to position above or below the median, while most of the cases are rather low in regard to libraries. The majority of the cities report nothing for the last three items. The cost per pupil varies from \$24.85 to \$42.40 which approximates the median (\$31.25) although

two cases are slightly below and one is somewhat above the limits of the middle fifty per cent. In regard to the tax rate we note a variation from 24 to 93 mills which of course is very high. To recapitulate, the percentile expense for columns two to five inclusive, and eight, are decidedly below the medians, while teachers' and janitors' salaries and fuel are somewhat above; but the item which is most extremely high is water, light, power, etc. Therefore Iowa cities are using an undue amount of their school funds for this last item largely at the expense of supervision and principals' salaries.

Table XII

The Items to which the Numbers at the Top of Each
Vertical Column Refer.

2. Board of education and business offices.
3. Superintendent's office.
4. Salaries of supervisors.
5. Salaries and expenses of principals.
6. Salaries of teachers.
7. Textbooks.
8. Stationery, supplies, and other instruction expenses.
9. Wages of janitors and other employees.
10. Fuel.
11. Water, light, power, janitors' supplies, etc.
12. Maintenance - repairs, replacement of equipment, etc.
13. Libraries.
14. Promotion of health.
15. Transportation of pupils.
16. Payment to other schools, pensions, rent, etc.

Table XII

Deviations for Iowa Cities.

	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>		
Medians	.97	5.61	3.64	5.28	61.90	2.46	3.09	6.68		
Cities										
100-		.19			- 1.90	-2.16	-1.99	3.62		
101-		-2.13		- .38	1.00		- .29	- .38		
102-	- .47	-1.21		-3.18	2.00		.01	.92		
103-	.03	-5.21			2.70	1.34	-1.49	2.02		
104-		.29	9.86		-2.60			.92		
105-	- .87	1.09		-2.08	4.60	2.84	- .79			
106-	.03	.69			5.40		-2.99	2.52		
107-		-1.71		-2.58	8.70	-2.36	.01	1.12		
	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>		Pupil	Tax
Medians	4.31	2.08	5.13	.72	.63	2.50	1.39		Cost	Rate
Cities										
100-	3.89	.62	-2.43	-.42	-.23		6.92			28.2
101-	1.01	2.32	.97				3.62	\$24.85		54.9
102-	1.99	8.62		-.62	.57			42.40		78.0
103-	- .71	-1.08	-2.73	-.42			10.72			44.0
104-	- .11	.42	1.87					35.87		24.0
105-		13.20		-.28				32.10		92.0
106-	2.49	1.52	.57	.28						45.2
107-	- .21	.32	- .23	-.32				25.20		93.0

Conclusion

The percentile medians determined in this investigation approximate very closely those found by Dr. Strayer a decade earlier in larger cities, with the exception of supervision which evidently receives greater emphasis in the particular cases which are herein represented. The very marked agreement between the two studies is in itself abundant proof that the earlier work is of real value and its results dependable. The median cost per pupil is about two dollars higher than in the larger systems and there is much greater variation between the lowest and the highest extreme cases. In both Minnesota and Iowa there seems to be a slight yet noticeable tendency to over emphasize the ordinary running expenses of the system and to allow the items which tend toward efficient instruction to suffer. A comparison of the tax rates, Tables XI and XII, in these states gives one a splendid argument to support the theory that the United States Department of Education should be given the power and the funds necessary to equalize the educational opportunities in the different parts of the country. A state may do this fairly well for systems within her own boundaries, but such a plan allows the possibility of great variations among the several states. It is pretty generally recognized that aid should be distributed upon some basis of effort and need. It is evident that a city paying a school tax of ninety three mills (Oskaloosa, Iowa) is making a much greater effort than one paying only nine tenths of one mill (Hibbing, Minnesota) although it is possible to have a larger school fund in the latter case if the assessed valuation is very high. In such a situation the former case is one which

expends by far the greater effort and at the same time is the more needy and should therefore receive aid. Equalization of these conditions can be accomplished only by some organization which has jurisdiction over the country at large.

In the words¹ of Dr. Ellwood P. Cubberley the problem of finance in education is as follows: "The process of education is primarily the business of spending more money in a better way, and there is no other way to make good schools. You must get at the process of spending your money so as to make both sides of your dollar count, and get the maximum results for the money you are putting in. At the same time, you must work to get more dollars to spend to increase the value of your output." That is, in addition to a better distribution of the school funds we must recognize a need for a greater total expenditure. Among the duties which fall to the lot of an administrator of a public school system is the process of educating the community so that the patrons of the system will be willing to support a liberal financial policy.

(1) Bulletin of Extension Division, Indiana University, Conference on Educational Measurements, February 1917, P. 47.

Table XIII

Cities and Their Code Numbers.

Alabama	Connecticut con't	Illinois con't
1- Dothan	26- Killingsley	51- Centralia
2- Florence	27- New Milford	52- Charleston
3- Huntsville	28- Plainsfield	53- Clinton
4- New Decatur	29- Plymouth	54- De Kalb
5- Talladega	30- Putnum	55- Forest Park
6- Tuscaloosa	31- Southington	56- Granite City
California	32- Stafford	57- Harvey
7- Alhambra	33- Stonington	58- Kewanee
8- Marysville	34- Stratford	59- La Grange
9- Napa	35- Westport	60- Litchfield
10- Richmond	36- Winchester	61- Madison
11- San Rafael	Georgia	62- Marion
12- Santa Ana	37- Albany	63- Maywood
13- Santa Rosa	38- Americus	64- Monmouth
Colorado	39- Dublin	65- Mount Carmel
14- Boulder	40- Elberton	66- Mount Vernon
15- Canon City	41- Fitzgerald	67- Murphyshoro
16- Cripple Creek	42- Gainesville	68- Olney
17- Fort Collins	43- Lagrange	69- Ottawa
18- Grand Junction	44- Marietta	70- Pana
19- Leadville	45- Newman	71- Paris
Connecticut	46- Valdosta	72- Pekin
20- Branford	Illinois	73- Peru
21- Derby	47- Beardstown	74- Pontiac
22- East Hartford	48- Belvidere	75- Sterling
23- Enfield	49- Berwyn	76- Taylorsville
24- Fairfield	50- Carbondale	
25- Huntington		

Illinois con't
77- Urbana

Indiana
78- Alexandria
79- Bedford
80- Bloomington
81- Brazil
82- Clinton
83- Columbus
84- Connorsville
85- Crawfordsville
86- Frankfort
87- Goshen
88- Greensburg
89- Lebanon
90- Madison
91- Mount Vernon
92- New Castle
93- Noblesville
94- Portland
95- Seymour
96- Valparaiso
97- Wabash
98- Washington
99- Whiting

Iowa
100- Cedar Falls
101- Centerville
102- Charles City

Iowa con't
103- Creston
104- Fort Madison
105- Grinnell
106- Oelwein
107- Okaloosa
Kansas
108- Arkansas City
109- Chanute
110- Emporia
111- Galena
112- Iola
113- Junction City
114- Newton
115- Ottawa
116- Rosedale
117- Salena
118- Wellington
119- Winfield
Kentucky
120- Ashland
121- Bellevue
122- Bowling Green
123- Danville
124- Dayton
125- Hopkinsville
126- Mayfield
127- Mayville
128- Paris

Kentucky con't
129- Richmond
130- Winchester
Maine
131- Brewster
132- Brunswick
133- Galais
134- Gardiner
135- Preeque Isle
136- Rockland
137- Rumford
138- Saco
139- Sanford
140- Skowhegan
141- South Portland
Massachusetts
142- Abington
143- Amesbury
144- Amherst
145- Andover
146- Athol
147- Belmont
148- Blackstone
149- Baintree
150- Bridgewater
151- Chelmsford
152- Concord
153- Dedham
154- Easthampton

Massachusetts con't

- 155- Easton
- 156- Fairhaven
- 157- Franklin
- 158- Grafton
- 159- Hudson
- 160- Mansfield
- 161- Marblehead
- 162- Middleboro
- 163- Milton
- 164- Montague
- 165- Natick
- 166- Needham
- 167- North Attleboro
- 168- Northbridge
- 169- Palmer
- 170- Rockland
- 171- Saugus
- 172- Stoneham
- 173- Stoughton
- 174- Swampscott
- 175- Ware
- 176- Wellesley
- 177- Westboro
- 178- West Springfield
- 179- Whitman
- 180- Winchendon
- 181- Winchester

Michigan

- 182- Albion
 - 183- Benton Harbor
 - 184- Boyne City
 - 185- Cadillac
 - 186- Cheyboagan
 - 187- Coldwater
 - 188- Hancock
 - 189- Hillsdale
 - 190- Houghton
 - 191- Ionia
 - 192- Iron Mountain
 - 193- Ludington
 - 194- Monroe
 - 195- Mount Clemens
 - 196- Negaunee
 - 197- Owasso
 - 198- St. Joseph
 - 199- Three Rivers
 - 200- Wyandotte
 - 201- Ypsilanti
- Minnesota
- 202- Albert Lea
 - 203- Bemidji
 - 204- Chisholm
 - 205- Cloquet
 - 206- Crookston
 - 207- Eveleth
 - 208- Hibbing

Minnesota con't

- 209- New Ulm
 - 210- Owatonna
 - 211- Red Wing
- Mississippi
- 212- Columbus
 - 213- Corinth
 - 214- Greenville
 - 215- Gulfport
 - 216- Laurel
 - 217- McComb
 - 218- Yazoo City
- Missouri
- 219- Cape Girardeau
 - 220- Carthage
 - 221- Flat River
 - 222- Fulton
 - 223- Independence
 - 224- Kirksville
 - 225- Lexington
 - 226- Mexico
 - 227- Nevada
 - 228- Poplar Bluff
 - 229- Webster Groves
- Nebraska
- 230- Beatrice
 - 231- Columbus
 - 232- Fairbury
 - 233- Fremont
 - 234- Hastings

Nebraska con't
235- Hearnay

236- Norfolk

237- York

New Hampshire
238- Claremont

239- Derry

240- Franklin

241- Lebanon

242- Rochester

243- Somersworth

New Jersey
244- Dover

245- Englewood

246- North Plainfield

247- Nutley

248- Princeton

249- Rahway

250- Red Bank

251- Ridgewood

252- Rutherford

253- Salem

254- Somerville

255- South Amboy

256- South Orange

257- Vineland

258- Westfield

New York
259- Albion

260- Canadaigua

New York con't
261- Catskill

262- Fredonia

263- Haverstraw

264- Hoosick Falls

265- Hudson Falls

266- Ilion

267- Malone

268- Mamaroneck

269- Mechanicsville

270- Medina

271- Newark

272- North Tarrytown

273- Norwich

274- Oneida

275- Oneonta

276- Port Jervis

277- Salamanca

278- Seneca Falls

279- Solvay

280- Tarrytown

281- Tonawanda

North Carolina
282- Concord

283- Elizabeth City

284- Gastonia

285- Goldsboro

286- High Point

287- Newbern

North Carolina con't
288- Salisbury

289- Washington

290- Wilson

Ohio

291- Athens

292- Barberton

293- Bellefontaine

294- Bellevue

295- Bowling Green

296- Bucyrus

297- Circleville

298- Connesut

299- Coshocton

300- Defiance

301- Delaware

302- Delphos

303- East Cleveland

304- Findlay

305- Gallipolis

306- Greenville

307- Martins Ferry

308- Nelsonville

309- Niles

310- Norwalk

311- Ravenna

312- St. Marys

313- Sidney

314- Troy

Ohio con't

- 315- Urbana
- 316- Walakoneta
- 317- Washington
- 318- Wellsville
- 319- Wooster
- Pennsylvania
- 320- Ambridge
- 321- Archbald
- 322- Ashland
- 323- Bangor
- 324- Bellevue
- 325- Berwick
- 326- Blakely
- 327- Bloomsburg
- 328- Bristol
- 329- Carrick
- 330- Catawauqua
- 331- Charleroi
- 332- Clearfield
- 333- Coaldale
- 334- Conshohocken
- 335- Coraopolis
- 336- Corry
- 337- Danville
- 338- Darby
- 339- Dickson City
- 340- Donora
- 341- Duryea

Pennsylvania con't

- 342- East Conemaugh
- 343- Edwardsville
- 344- Etna
- 345- Forest City
- 346- Freeland
- 347- Glassport
- 348- Greenville
- 349- Hanover
- 350- Huntingdon
- 351- Jeannette
- 352- Jersey Shore
- 353- Juanita
- 354- Kane
- 355- Kingston
- 356- Langford
- 357- Larkeville
- 358- Latrobe
- 359- Lehighton
- 360- Lewistown
- 361- Lock Haven
- 362- Luzerne
- 363- Middletown
- 364- Millvale
- 365- Milton
- 366- Minersville
- 367- Monongahela
- 368- Mount Pleasant

Pennsylvania con't

- 369- Murhall
- 370- New Brighton
- 371- New Kensington
- 372- Northampton
- 373- Olyphant
- 374- Punxsutawney
- 375- Rankin
- 376- Ridgway
- 377- Rochester
- 378- St. Marys
- 379- Sayre
- 380- Sharpsburg
- 381- Swissvale
- 382- Swoyerville
- 383- Tamaqua
- 384- Tarentum
- 385- Taylor
- 386- Throop
- 387- Titusville
- 388- Tyrone
- 389- West Berwick
- 390- West Pittston
- 391- Wilberding
- Rhode Island
- 392- Bristol
- 393- Burrillville
- 394- Coventry

Rhode Island con't

- 395- Johnston
- 396- Lincoln
- 397- N'rth Providence
- 398- Warren
- 399- Westerly

South Carolina

- 400- Anderson
- 401- Greenwood
- 402- Newberry
- 403- Rock Hill
- 404- Sumter

Texas

- 405- Amarillo
- 406- Brownwood
- 407- Corpus Christi
- 408- Ennis
- 409- Gainesville
- 410- Greenville
- 411- Houston Heights
- 412- Orange
- 413- Sulphur Springs
- 414- Taylor
- 415- Texarkana
- 416- Weatherford
- 417- Wichita Falls

Vermont

- 418- Bernington
- 419- Brattleboro
- 420- Montpelier

Vermont con't

- 421- Rockingham
- 422- St. Albans

Virginia

- 423- Bristol
- 424- Charlottesville
- 425- Clifton Forge
- 426- Fredericksburg
- 427- Winchester

Wisconsin

- 428- Antigo
- 429- Baraboo
- 430- Beaver Dam
- 431- Grand Rapids
- 432- Menasha
- 433- Menominee
- 434- Merrill
- 435- Neenah
- 436- Oconto
- 437- Rhinelander
- 438- South Milwaukee
- 439- Stevens Point
- 440- Watertown
- 441- Waukesha
- 442- West Allis