UNIVERSAL WIRING TABLE.

Arthur R. Roe, in American Machinist.

In arranging the accompanying table, advantage has been taken of the fact that in the B. & S. gauge, wires from 0000 to 6 have ten times the cross-sectional area of wires from 7 to 16. For instance, No. 1 has an area of 83,694 circular mils and No. 11 has 8,234 mils; No. 4 has an area of 41,742 circular mils, and No. 14, 4,106 circular mils. So. whatever current No. 1 or No. 4 will carry at a given "drop," No. 11 or No. 14 will carry respectively one-tenth of that current with the same drop.

In the table the large figures in the two upper horizontal rows give the sizes in B. & S. gauge, the sizes from No. 0000 to No. 6 occupying the upper row, and the sizes from No. 7 to No. 16 the lower row, each size in the lower row being one-tenth the area of the size immediately above it. The small figures in these rows give the carrying capacity in amperes of the wire size in which column they are found, the upper figure giving the amperes required for a density of 1,000 amperes per square inch, the small figure immediately below the gauge number giving the maximum amperes for rubber-covered wire, and the lowest small figure the maximum amperes for weather-proof wire, both according to the National Electrical Code. The numbers in the body of each table give the load in ampere-feet (ampere × distance or length of one wire), for the different wire sizes. The left-hand vertical column applies to the upper row of wires and the right-hand column to the lower row.

The table becomes universal by applying any multiple or sub-multiple of 10. For example, at one volt loss No. 0000 wire has a capacity of 9,842 ampere-feet, and at 0.1 volt loss the capacity is 9,842 ampere-feet. Similarly, at 10 volts loss the capacity is 98,418 ampere-feet, and at 100 volts it is, of course, increased tenfold.

Volts Loss Nos. 0000 to 6 Wire.	211,600 167 **0000** 210 312	167,805 132 **000** 177 262	133,079 105 **00** 150 220	105,592 82 **0** 127 185	83,694 66 **1** 107 156	66,373 52 **2** 90 131	52,633 41 **3** 76 110	41,742 34 **4** 65 92	33,102 26 **5** 54 77	26,250 21 **6** 46 65	Volts Loss Nos. 7 to 16 Wire.
	20,816 16 **7** 39 55	16,508 13 **8** 33 46	13,094 10 **9** 28 37	10,381 8 **10** 24 32	8224 6.5 **11** 20 27	6522 5 **12** 17 23	5178 4 **13** 14 19	4106 3 **14** 12 16	3256 2.5 **15** 9 12	2582 2 **16** 6 8	
¼	2460	1951	1547	1228	973	772	612	485	385	305	2½
½	4921	3902	3095	2455	1946	1543	1224	971	770	610	5
¾	7381	5853	4642	3683	2919	2315	1836	1456	1155	916	7½
1	9842	7805	6190	4911	3893	3087	2448	1941	1539	1221	10
1¼	12,302	9756	7737	6139	4866	3859	3060	2427	1924	1536	12½
1½	14,763	11.707	9284	7367	5839	4631	3672	2912	2309	1831	15
1¾	17,223	13,658	10,832	8594	6812	5402	4284	3397	2694	2136	17½
2	19,683	15,609	12,379	9822	7785	6174	4896	3883	3079	2442	20
2¼	22,143	17,561	13,927	11,050	8759	6946	5508	4369	3464	2747	22½
2½	24,604	19,512	15,474	12,278	9732	7718	6120	4854	3849	3052	25
2¾	27,065	21,463	17,022	13,506	10,705	8490	6732	5339	4234	3357	27½
3	29,525	23,414	18,569	14,733	11,678	9261	7344	5825	4619	3663	30
3¼	31,986	25,365	20,117	15,961	12,651	10,033	7956	6310	5004	3968	32½
3½	34,446	27,317	21,664	17,189	13,625	10,805	8568	6795	5388	4273	35
3¾	36,907	29,268	23,211	18,417	14,598	11,577	9180	7281	5773	4578	37½
4	39,367	31,219	24,759	19,645	15,571	12,349	9792	7766	6158	4884	40
4¼	41,827	33,170	26,306	20,872	16,544	13,120	10,404	8251	6543	5189	42½
4½	44,288	35,121	27,854	22,100	17,517	13,892	11,016	8737	6928	5494	45
4¾	46,748	37,073	29,401	23,328	18,491	14,664	11,628	9222	7313	5799	47½
5	49,209	39,024	30,949	24,556	19,464	15,436	12,240	9708	7698	6105	50
5¼	51,669	40,975	32,496	25,784	20,437	16,208	12,852	10,193	8083	6410	52½
5½	54,130	42,926	34,044	27,011	21,410	16,979	13,464	10,679	8468	6715	55
5¾	56,590	44,877	35,591	28,239	22,383	17,751	14,076	11,164	8853	7020	57½
6	59,051	46,829	37,139	29,467	23,357	18,523	14,688	11,649	9237	7326	60
6¼	61,511	48,780	38,696	30,695	24,330	19,295	15,300	12,135	9622	7631	62½
6½	63,972	50,731	40,233	31,929	25,303	20,067	15,912	12,620	10,007	7936	65
6¾	66,432	52,682	41,781	33,156	26,276	20,838	16,524	13,105	10,392	8241	67½
7	68,892	54,633	43,328	34,378	27,249	21,610	17,136	13,591	10,777	8547	70
7¼	71,353	56,585	44,876	35,606	28,223	22,382	17,748	14,076	11,162	8852	72½
7½	73,813	58,536	46,423	36,834	29,196	23,154	18,360	14,562	11,547	9157	75
7¾	76,274	60,487	47,971	38,062	30,169	23,926	18,972	15,047	11,932	9462	77½
8	78,734	62,438	49,518	39,289	31,142	24,697	19,584	15,533	12,317	9768	80
8¼	81,195	64,390	51,066	40,517	32,115	25,469	20,196	16,018	12,702	10,073	82½
8½	83,655	66,341	52,613	41,745	33,089	26,241	20,808	16,503	13,086	10,378	85
8¾	86,116	68,292	54,160	42,973	34,062	27,013	21,420	16,990	13,471	10,683	87½
9	88,576	70,243	55,708	44,201	35,035	27,785	22,032	17,472	13,856	10,989	90
9¼	91,036	72,194	57,255	45,428	36,008	28,556	22,644	17,959	14,241	11,294	92½
9½	93,497	74,145	58,803	46,656	36,981	29,328	23,256	18,445	14,626	11,599	95
9¾	95,957	76,097	60,350	47,884	37,955	30,100	23,868	18,930	15,011	11,904	97½
10	98,418	78,048	61,898	49,112	38,928	30,872	24,480	19,416	15,396	12,210	100

In order to use the table it is only necessary to multiply the single distance in feet (the length of one wire) by the load in amperes. As above stated, the product is ampere-feet, and the table shows all the combinations of drop and wire size that correspond to any given number of ampere-feet. For example, if the ampere-feet should be 9,500, the table shows that No. 0000 wire will carry this load at 1-volt drop, No. 000 at 1¼ volts drop, No. 0 at 2 volts drop, No. 1 at 2½ volts drop, No. 3 at 4 volts drop, and so on. To illustrate the use of the table more explicitly, suppose it is desired to deliver 10 amperes over a line 700 feet long with a loss of 3 volts. The ampere-feet will be 10 × 700 = 7,000. Referring to the 3-volt line of the table, taking the 3 volts in the left-hand edge column, the nearest number to this is 7,344 ampere-feet, and at the head of the column in which this number is located are Nos. 3 and 13. As the left-hand "drop" column applies only to the upper row of figures, the size of wire to be taken would be No. 3. If the drop had been 30 volts instead of 3, then No. 13 would have been the proper size of wire.

Again, suppose that it were desired to deliver 15 amperes over a distance of 600 feet with a drop of 15 volts. The ampere-feet would be 15 × 600 = 9,000, and tracing into the table from 15 volts in the right-hand column, the nearest number is 9,284; at the head of this column are Nos. 00 and 9, and as the right-hand "drop" column was used, No. 9 is the proper size of wire.

RODERICK McCALL, PROVINCIAL ENGINEER OF NOVA SCOTIA.

Dr. Martin Murphy, C.E., Provincial Engineer of Nova Scotia, after a service of a quarter of a century, has retired, and is succeeded by Roderick McCall. Mr. McCall is about thirty-five years old, and was born at New Glasgow, N.S. He was educated at the High School in that town, at Pictou Academy, and at the Royal Military College, from which college he graduated at the age of nineteen. The class of that year numbered eighteen, and some of its members have already won distinction. All but six of these young Canadians accepted commissions in the Imperial service. Two of them—Capt. Hensley and Capt. Laurie—fell in the South