

THE CLIFFS POWER & LIGHT COMPANY  
ANNUAL REPORT  
YEAR 1945

Further reductions in mining operating schedules during the year 1945 reduced the energy generated and purchased during the year from the peak year of 1943 by approximately 7.7%, and below the year 1944 by 5.1%, to a total generated and purchased of 101,027,280 KWH. Of this amount, we generated in our own power plants 93,210,000 KWH and purchased 7,817,280. The KWH sold were proportionately reduced to 91,297,978. The rainfall during the year was slightly below that which has been experienced since 1941, but additional storage facilities and the manner in which the precipitation occurred permitted us to keep our energy generated above 90,000,000 KWH and approximately 14,000,000 KWH more than was generated in 1944. Neither of our large storage basins filled at any time during the year, but the Deer Lake storage dam attained a height considerably above that permitted by the old dam and accordingly contributed materially towards the annual hydro production.

Still unsettled at the close of 1944 was the electric rate situation in Ishpeming, Negaunee and Munising which had been instigated by H. J. Adams and the report of Dr. John Bauer during 1943. In January of 1945, our Company offered a reduction in wholesale rate from 1.2¢ per KWH to 1.1¢ per KWH to the Michigan Gas & Electric Company who, in turn, during February offered a comparable reduction in city of Ishpeming electric energy schedules. On March 7th the city of Ishpeming accepted the rate proposal submitted to them and dismissed the controversy then pending before the Michigan Public Service Commission. The Cliffs Power & Light Company immediately made a reduction of 1 mill in its rate to all companies to whom it was selling power for resale and the entire rate controversy was settled.

On January 1st, 1945 construction was in progress on increasing the height of the Silver Lake Dam. This work was continued until the month of June at which time it was completed by the contractor. About the time of completion, heavy rainfall in the Silver Lake area caused considerable washing of the dam due to lack of sod to prevent erosion. About the same time the levee settled which necessitated refilling a portion of the upstream side of the dam. This work was successfully completed and during the summer water was caught in the dam well above the level which would have been permitted by the older structure.

During 1944, the Company had ordered a carrier current signal equipment for the Gwinn and Brownstone substations which would permit the operation of the Gwinn switching station from the Brownstone substation over our own transmission conductors rather than through leased lines of the Michigan Bell Telephone system which had been utilized in the past. This equipment arrived during the year and was installed, but although it was possible to operate the equipment, complete utilization of both metering and dispatching channels could not be obtained so the problem was referred to the Westinghouse Company for a final solution. After numerous tests and changes of apparatus, the factory felt that it had sufficient data on which to complete the changes of the equipment to guarantee satisfactory operation. However, the redesigned portions had not been received and installed, and we had not accepted the equipment as being in satisfactory operation at the end of 1945.

On April 23rd an employee of the Ericson Oil Company, named Kenneth Sleeman, was badly burned while unloading a car of gasoline at the Oil Company's siding on the L.S.&I. Railroad at Negaunee. Sleeman was in the hospital for several months and finally died in December as a result of his burns. This was an unfortunate accident, but at the same time the occurrence was extremely fortunate that the gasoline tank car did not explode and cause extensive property damage and loss of life.

THE CLIFFS POWER & LIGHT COMPANY  
ANNUAL REPORT  
YEAR 1945

In May and June there were meetings held between the citizens of the Upper Peninsula and the U. S. Army Engineering Corps in regard to harbor improvements at the mouth of the Au Train river and in regard to the proposed ship canal from Lake Superior to Lake Michigan by way of the Au Train River, Whitefish River and Little Bay de Noc. Although we were promised reports on these meetings by the Army Engineers, none have been received and since there has been no further comment in regard to the matter presume that it has been decided that no immediate action shall be taken.

After having considered the break which occurred in the steel pipe line of the Carp Plant during 1944, it was decided that the entire pipe should be welded on each side of the lockbar joints to strengthen these joints and to assist in preventing a reoccurrence of the failure which had been experienced. Accordingly, we received permission to begin the work and during the months of August, September and October the welding was conducted. In order to ascertain the most economical method of doing the work, various schemes of operation were tried and the most economical decided upon. It is anticipated that this work will be started again as soon as weather conditions permit in 1946.

No serious difficulties were experienced during the year with any of the hydraulic generating equipment, and the only major repairs that were done was the rebuilding of the forebay and wing walls at the Republic power plant which was started in August and was completed before the end of the year.

On October 26th notice was received from the United Steelworkers of America, CIO, that a majority of our employees were members of that organization, and that it had requested an election for the purpose of having the union designated as bargaining agent for our Company's employees. Negotiations for this election were conducted during the remainder of the year and Friday, January 11, 1946, was set as the date at which the election was to be held. At the time of writing this report the election has been held and the union was designated as the bargaining agent by a vote of 25 to 15.



THE CLIFFS POWER & LIGHT COMPANY

STATISTICAL DATA - 1945

KILOWATT HOURS GENERATED & PURCHASED

	McCLURE	GARP	HOIST	AURTRAIN	REPUBLIC	ESCANABA	PURCHASED	TOTAL	STATION USE	DELIVERED TO LINES	KWH SOLD	TRANSMISSION LOSSES	
												KWH	%
Jan.	3,588,000	1,090,000	1,300,000	313,100	118,900	220,000	1,176,640	7,806,640	18,370	7,788,270	7,145,723	642,547	8.25
Feb.	4,389,000	896,000	1,453,000	362,300	102,300	218,000	861,400	8,282,000	21,010	8,260,990	7,421,644	839,346	10.1
Mar.	3,968,000	1,703,000	1,273,000	374,900	128,100	354,000	241,000	8,042,000	18,980	8,023,020	7,301,886	721,134	8.98
Apr.	3,157,000	2,044,000	1,087,000	629,200	318,000	1,094,000	2,000	8,331,200	18,030	8,313,170	7,722,395	590,775	7.10
May	4,242,000	1,156,000	1,486,000	694,400	301,000	758,000	0	8,637,400	18,520	8,618,880	7,921,277	697,603	8.09
June	3,568,000	1,562,000	1,283,000	663,000	344,200	1,008,000	385,000	8,813,200	17,220	8,795,980	8,049,717	746,263	8.48
July	4,337,000	1,240,000	1,506,000	583,900	329,800	542,000	0	8,538,700	19,400	8,519,300	7,663,238	856,062	10.04
Aug.	4,389,000	1,211,000	1,510,000	400,600	130,300	282,000	0	7,922,900	19,918	7,902,982	7,123,732	779,250	9.86
Sept.	4,500,000	1,322,000	1,527,000	219,900	104,600	300,000	466,000	8,419,918	19,582	8,419,918	7,506,116	913,802	10.85
Oct.	3,988,000	1,428,000	1,355,000	218,700	82,000	371,000	1,714,760	9,157,460	19,650	9,137,810	8,037,069	1,100,741	12.04
Nov.	3,305,000	1,550,000	1,190,000	259,000	115,400	625,000	1,345,120	8,389,520	18,410	8,371,110	7,854,096	517,014	6.17
Dec.	<u>3,608,000</u>	<u>1,097,000</u>	<u>1,358,000</u>	<u>357,000</u>	<u>217,400</u>	<u>404,000</u>	<u>1,625,260</u>	<u>8,666,760</u>	<u>19,630</u>	<u>8,647,130</u>	<u>7,551,085</u>	<u>1,096,045</u>	<u>12.67</u>
Yr.	47,039,000	16,299,000	16,328,000	5,076,000	2,292,000	6,176,000	7,817,280	101,027,280	228,720	100,798,560	91,297,978	9,500,582	9.42

THE CLIFFS POWER & LIGHT COMPANY  
ANNUAL REPORT  
YEAR 1945

STATISTICAL DATA - 1945

Month	- Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Precipitation -	0.77	2.09	1.69	3.39	3.38	3.05	2.31	3.50	3.31	2.06	3.81	1.45
Total Precipitation at Ishpeming during 1945	- 30.81" (2.56 ft.)											
Average " " Marquette	- 32.80" (46 year record)											

CARP RIVER PLANT:

Drainage area above Intake Dam	66.66 sq. miles											
Cubic feet precipitation in 1945	4,757,437,000											
Kilowatt hours generated in 1945	16,299,000											
Cubic feet water utilized (90 cu. ft. - 1 Kwh.)	1,466,910,000											
" " " in Carp Storage Basin Jan. 1, 1945	224,160,000											
" " " " " " " " Dec. 31, 1945	288,543,000											
" " " added to storage in 1945	64,383,000											
" " " wasted over Intake Dam	175,752,000											
Total run-off for year 1945 (Cubic feet)	1,707,045,000											
Run-off per sq. mile of drainage area (cubic feet)	25,608,000											
Second - feet of run-off	0.81											
Total Precipitation	<u>1913</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>	<u>1919</u>	<u>1920</u>	<u>1921</u>	<u>1922</u>	<u>1923</u>	
Sec.ft. per sq.mile run-off	30.11	26.53	38.40	36.83	25.46	31.05	29.50	27.40	30.38	33.67	21.90	
Total Precipitation	<u>1924</u>	<u>1925</u>	<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>	
Sec.ft. per sq.mile run-off	22.95	20.71	35.69	29.86	36.06	32.28	23.14	36.70	31.20	32.72	32.87	
Total Precipitation	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	
Sec.ft. per sq.mile run-off	27.10	30.23	30.10	35.32	33.58	30.34	32.20	34.26	32.04	32.77	30.81	

McCLURE PLANT:

Drainage area above Intake Dam	140.52 sq. miles											
Cubic feet precipitation in 1945 (Hoist Plant-37.94" 3.16')	12,379,213,000											
Kilowatt hours generated at McClure Plant in 1945	47,039,000											
Cubic feet water utilized (125 cu. ft. - 1 Kwh)	5,879,875,000											
" " " wasted over Intake Dam	0											
" " " in Hoist Storage Basin Jan. 1, 1945	1,508,606,000											
" " " " " " " " Dec. 31, 1945	1,587,952,000											
" " " added to " " in 1945	79,346,000											
" " " in Silver Lake January 1, 1945	0											
" " " " " " " " December 31, 1945	91,408,000											
" " " added to Silver Lake in 1945	91,408,000											
Total run-off for year 1945 (Cubic feet)	6,050,629,000											
Run-off per sq. mile of drainage area	43,058,000											
Second-feet of run-off	1.36											
Total Precipitation	<u>1921</u>	<u>1922</u>	<u>1923</u>	<u>1924</u>	<u>1925</u>	<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>	
Sec.ft. per sq.mile run-off	35.10	42.03	26.60	30.49	24.06	43.95	35.51	43.80	38.75	30.81	37.02	
Total Precipitation	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	
Sec.ft. per sq.mile run-off	32.54	35.07	35.02	29.96	32.16	38.18	40.93	41.22	36.59	38.15	40.20	
Total Precipitation	<u>1943</u>	<u>1944</u>	<u>1945</u>									
Sec.ft. per sq.mile run-off	35.64	37.62	37.94									



THE CLIFFS POWER & LIGHT COMPANY  
ANNUAL REPORT  
YEAR 1945

SUBSTATION TRANSFORMERS:

Substation transformers installed as of December 31, 1945.

<u>66,000/2300 Volts</u>	<u>Phase</u>	<u>No.</u>	<u>K.V.A.</u>	<u>Total K.V.A.</u>	
Munising Substation	1	3	667	2,001	
Seney "	1	1	25	25	
Inland #1 "	1	3	500	1 500	
" #2 "	1	3	500	1 500	
AuTrain Prison Camp Sub	1	1	50	<u>50</u>	5,076 K.V.A.
<u>2300/66,000 Volts</u>					
AuTrain Substation	1	3	333-1/3	<u>1 000</u>	1 000
<u>33,000/66,000 Volts</u>					
Gwinn Substation	1	3	1,250	<u>3 750</u>	3 750
<u>33,000/12,000 Volts</u>					
Clarksburg Substation	1	3	37-1/2	112½	
" "	1	2	150	<u>300</u>	412½
<u>33,000/2300 Volts</u>					
Gwinn Substation	1	3	75	225	
Cliffs Shaft-Holmes Substation	1	6	500	3 000	
Morris-Lloyd "	1	3	590	1 770	
Cambria-Jackson "	1	3	400	1 200	
Maas "	1	6	590	3,540	
Brownstone "	1	3	625	1 875	
Palmer "	1	2	625	1 250	
Greenwood "	1	2	400	800	
Princeton "	1	3	150	450	
Tilden "	1	1	1 250	1 250	
Palmer Rural "	1	4	15	60	
Negaunee-Athens "	1	3	1 000	3 000	
Mather "	1	3	2 000	<u>6 000</u>	24 420
<u>2300/33,000 Volts</u>					
Republic "	1	3	250	750	
Hoist Plant "	3	1	2 500	2 500	
Escanaba " "	1	3	590	1 770	
McClure " "	3	2	5 000	10 000	
Carp " "	1	3	1 900	5 700	
Hoist " "	1	3	667	2 000	
" " "	1	3	200	<u>600</u>	23 320
<u>12,000/440-220 Volts</u>					
Piqua-Marquette Substation	1	3	100	300	
<u>12,000/2300 to 2300/440-220</u>	( 1	3	185	555	
Piqua-Marquette Substation	( 1	3	100	<u>300</u>	1 155
<u>12,000/220-110 Volts</u>					
D.S.S.&.A. Ry at Clarksburg	1	1	2-1/2	<u>2½</u>	2½
<u>12,000/2300 Volts</u>					
McClure Plant (Furnace Lines)	3	2	1 250	2 500	
AuTrain Substation	1	3	185	555	
Chatham "	1	3	25	75	
Eben "	1	1	25	25	
Rumely "	1	2	15	30	
Inland #1 (Wis. Mich. Line)	1	3	50	150	
Rumely Substation	1	1	25	<u>25</u>	3 360

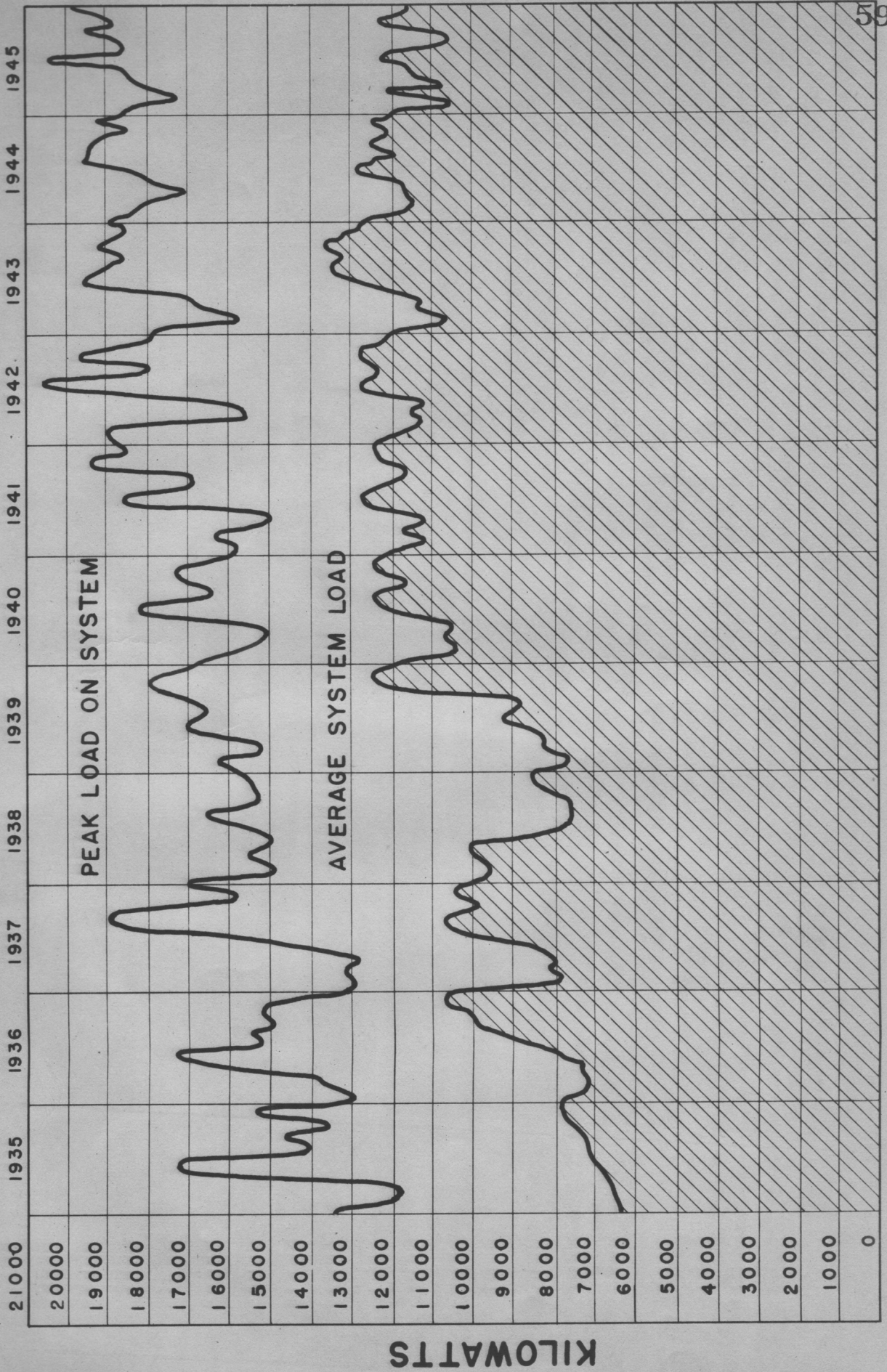
THE CLIFFS POWER & LIGHT COMPANY  
ANNUAL REPORT  
YEAR 1945

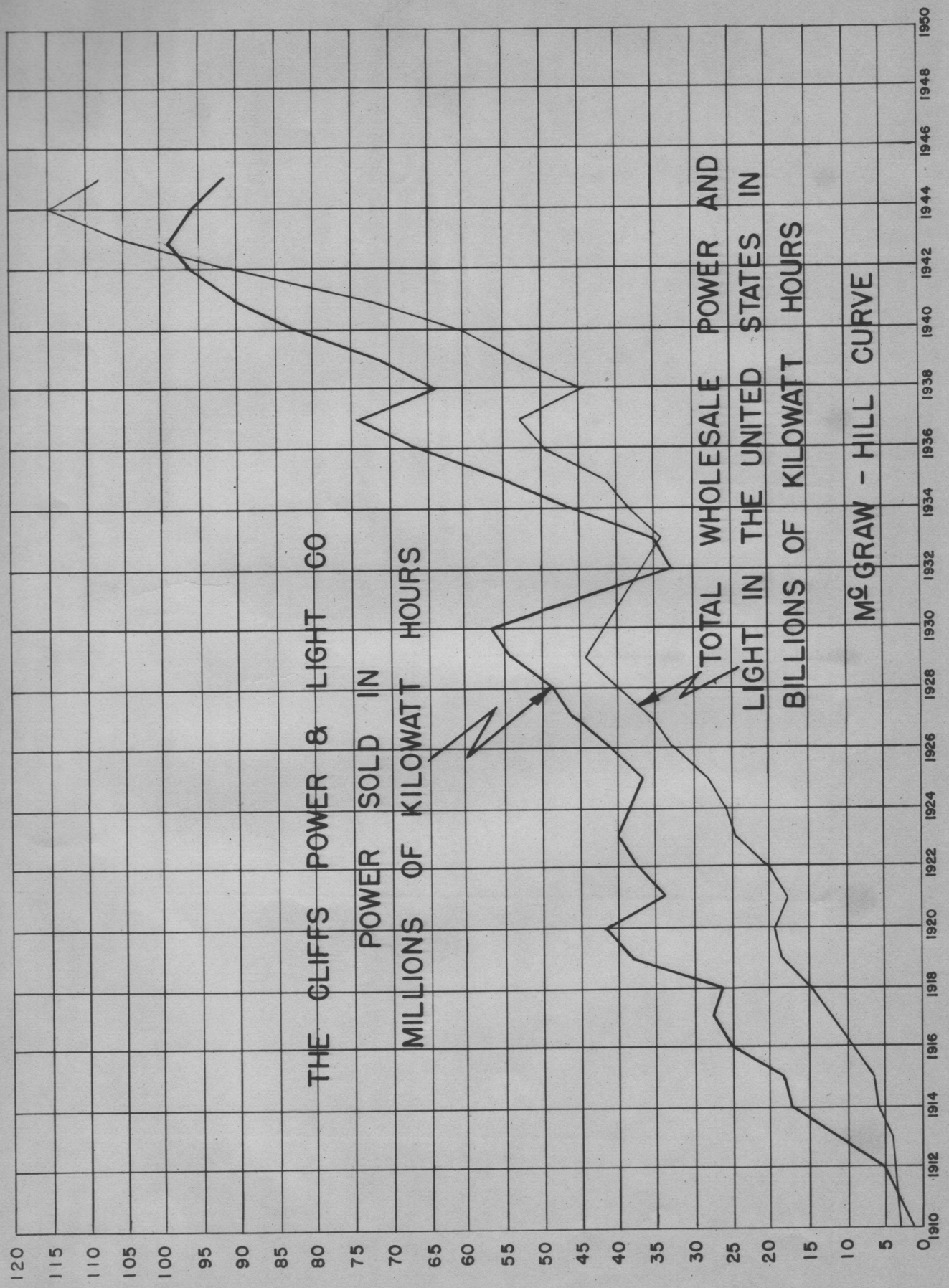
<u>SUBSTATION TRANSFORMERS: (CONT'D.)</u>	<u>Phase</u>	<u>No.</u>	<u>K.V.A.</u>	<u>Brought Fwd. Total K.V.A.</u>	61,641 KVA
<u>6,600/2300 Volts</u>					
Inland #1 Substation	1	3	25	75	
Blaney Park "	1	2	25	50	
" " "	1	1	15	15	
AuTrain Lake "	1	1	25	<u>25</u>	165
<u>6,600/115-230 Volts</u>					
Furnace Substation Lighting	1	1	1-1/2	<u>1½</u>	<u>1½</u>
					Grand Total ..... 61,807½ KVA

DISTRIBUTION TRANSFORMERS:

	<u>Number</u>	<u>Capacity</u>
Total at first of year	380	2,426-1/2 K.V.A.
" purchased during year	23	85-1/2
" installed " "	10	24-1/2
" sold " "	7	36
" at close of year	396	2,476
In stock at close of year	32	171
" service at " " "	326	1,926
C.P.&.L.Co. Plants & Auxiliaries	<u>38</u>	<u>379</u>
	396	2,476

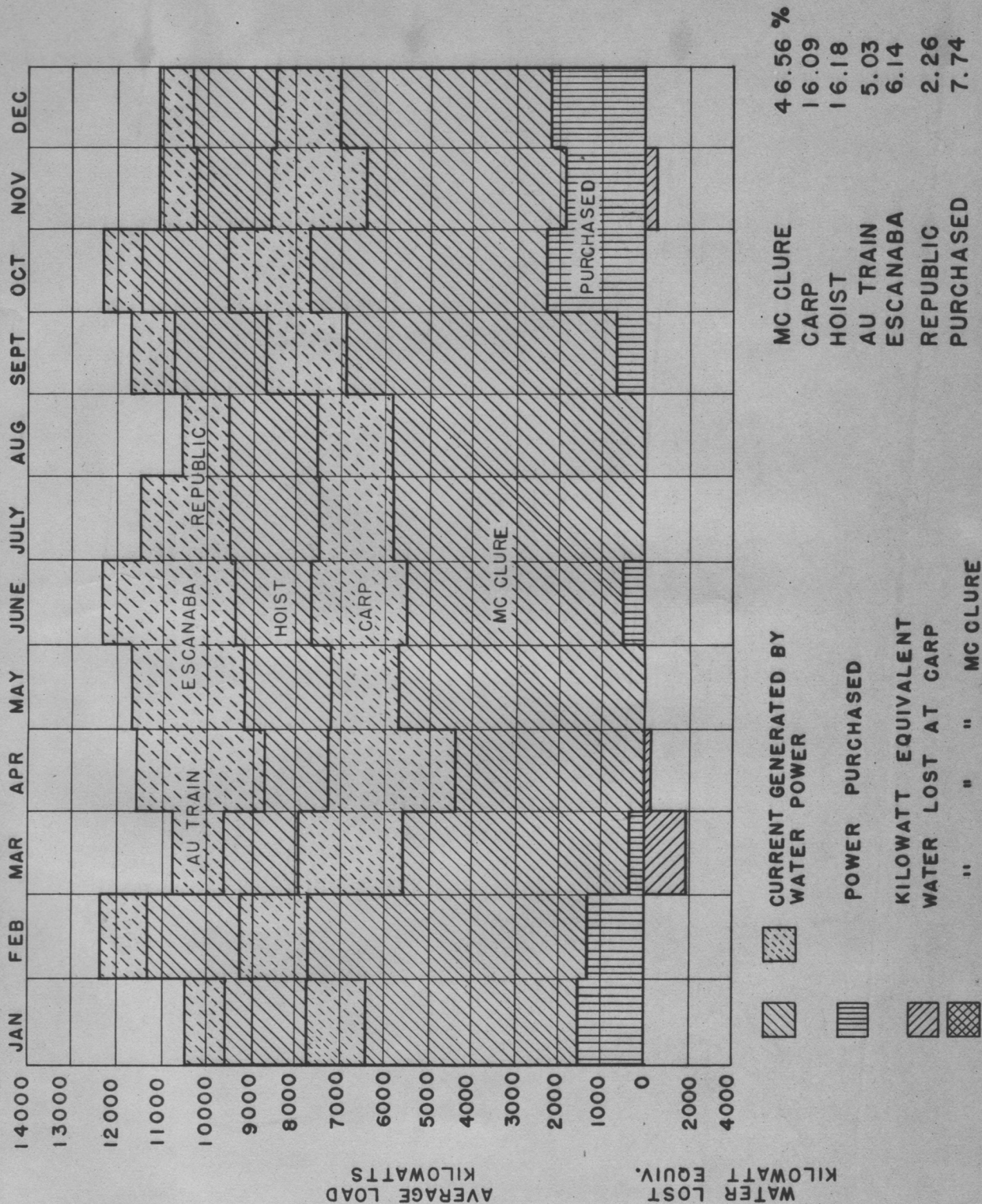








# 1945



PRECIPITATION BY YEARS

