

Observations
of the Total Solar Eclipse
of January 24, 1925
made by
Electric Companies
affiliated with the
Consolidated Gas Company
of New York

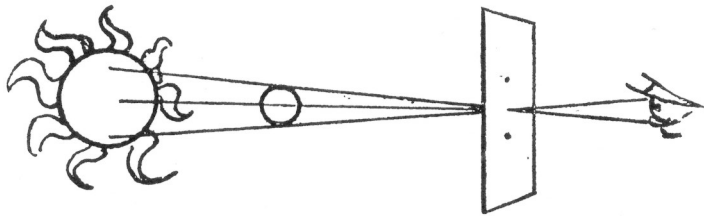
“The Sun’s rim dips,
The Stars rush out,
At one stride comes the dark”

—*The Ancient Mariner*

Leonardo da Vinci and the Eclipse

“His conceptions were infinitely varied; philosophizing over natural objects; among others, he set himself to investigate the properties of plants, to make observations on the heavenly bodies, to follow the movements of the planets, the variations of the moon, and the course of the sun”

*Leonardo da Vinci—from Vasari's Lives
of the Painters—published in 1550*



Original Sketch by Leonardo da Vinci

A Method of Seeing the Sun Eclipsed without Pain to the Eye

“Take a piece of paper and pierce holes in it with a needle, and look at the sun through these holes”

L. d. V- Cod. Trivul. fol 6 r

THEORY OF THE ...

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FOREWORD

By John W Lieb, *Vice-President and General Manager*
The New York Edison Company

THE TOTAL eclipse of the sun on January 24, 1925, was visible over a section of the country in which the electric light and power service is rendered by the New York Edison-United Companies and allied Electric Companies, the zone of totality crossing a part of the territory with every section immersed in the penumbra

While the astronomical and other scientific features of the eclipse were being investigated and recorded under the auspices of the authorities having specialized knowledge in the several fields of investigation, it was felt that some of the industrial and social aspects of the extraordinary phenomena, as affecting the light and power services in the territory involved, would be of interest. It was decided that the allied Companies should be thoroughly organized into committees operating in the various zones under the chairmanship of Mr Clarence L Law of The New York Edison Company and with the kind cooperation of the Electrical Testing Laboratories, in order to obtain all the data that was practicable as to the effect of the eclipse on the load carried by the several stations and substations, the exact determination of the zone of totality, photometric determinations of light intensity during the several periods of the eclipse, the provisions necessary for adequate street and highway lighting, etc

This data has been assembled in the form of a record as here presented, so that the various manifestations of the eclipse as reflected in the services rendered by the Electric Companies affiliated with the Consolidated Gas Company of New York, and operating in the zones traversed by the stupendous cosmic shadows, might be permanently recorded

The Co-operating Companies

Bronx Gas & Electric Company
New York & Queens Electric Light & Power Company
Northern Westchester Lighting Company
Peekskill Railway and Lighting Company
The New York Edison Company
The United Electric Light & Power Company
The Yonkers Electric Light & Power Company
Westchester Lighting Company

Minutes of Meeting of Committee to Make Observations of the Eclipse

Minutes of the meeting held at the Engineers' Club Tuesday, January 20, to discuss plans in connection with the activities of the local lighting companies relating to the eclipse

Present: Mr Joseph F Becker
 Mr Edward W Gorry
 Mr A H Kehoe
 Mr H W Leitch
 Mr W H Lawrence
 Mr W W Erwin
 Mr S G Rhodes
 Mr W T Dempsey
 Mr C W Wilder
 Mr John E Garabrant
 Mr R E Dennis
 Mr F V Magalhaes
 Mr Louis Resnick
 Mr Preston S Millar
 Dr Clayton H Sharp
 Mr Clarence L Law *Chairman*

It was decided to take load readings during the period of the eclipse Saturday, January 24, 1925, in accordance with the following schedule

<i>Time</i>	<i>Readings at Intervals of</i>
8:00 a m—9:00 a m	5 minutes
9:00 a m—9:25 a m	30 seconds
9:25 a m—10:45 a m	5 minutes

The following procedure was suggested for taking readings:

Five minutes before starting these special readings, signal 26 will be sent over the emergency signal system by telephone word given to those interested who are connected with the signal system

Five minutes after signal 26 is sent and continuing thereafter during the special reading time, a single stroke will be given on the emergency signal gongs at the time each reading of load is to be taken, so that the readings throughout the system will be simultaneous. Where stations are not connected with the emergency signal system, the System Operator's private wire to substations will be isolated during this time and the telephone bell rung at the time each reading is to be taken. If it is necessary in such stations to communicate with the System Operator, such communication should be transmitted over the public wires

In Queens, Hamilton Street will receive the signal over the emergency signal system and from there it will be transmitted by one of their operators by the private telephone wires to the various sub-stations

In Westchester, which is not connected with the emergency signal system, the direct telephone wire from the

System Operator to New Rochelle will be used, the signal being given by ringing the telephone bell. New Rochelle will then relay the signal by their private telephone wires to all of their substations

Yonkers and Dunwoodie will receive the signals over the private telephone wires from the System Operator

In generating stations having both frequencies, readings should be taken of the 25 cycle and the 60 cycle loads

The above schedule as to time is subject to change, depending on weather conditions. However, it should be understood that beginning five minutes after signal 26 is given, readings are then to be taken thereafter as each signal is given

On order from the City Department, street lamps will be lighted in New York City from 72nd Street north. If there is any change in the original plan, Mr W T Dempsey, who will be accompanied by an official of the Department of Water Supply, Gas and Electricity of the City of New York, will give word to the various Companies. In Westchester, each municipality will make its own decision and give word to the lighting company regarding the time that the street lighting will be turned on and extinguished

Under the direction of Mr F V Magalhaes, observers will be stationed on Riverside Drive from 72nd Street north to 135th Street, to determine, if possible, the edge of the shadow. Plans are being made to place two observers in each block on roofs of buildings, and it is expected there will be about 75 of these men in all. Men will also be stationed for observations on the Palisades and on Hell Gate Bridge

A photometer will be installed on the roof of the Dunwoodie Station in order to determine some light measurements

Photographers will be stationed at different points to make photographs of the phenomena. Mr John E Garabrant will have a man located at the Statue of Liberty and the southern part of New Jersey opposite New York to secure a picture of New York under these conditions. Other men will be stationed on Waterside roof, in Van Cortlandt Park, the roof of Dunwoodie Station, the roof of Briarcliff Lodge and possibly in Peekskill. In addition to still pictures, moving pictures will be made of the eclipse. Stations from which movies will be made will probably be the northern part of Riverside Drive and the roof of Briarcliff Lodge

Experiments will be tried to make color photos 15 minutes before and 20 minutes after the eclipse

Mr Magalhaes will make an investigation of the strength of wireless signals during the eclipse

CLARENCE L LAW *Chairman*

Observations to Determine Southern Limit of Totality

The following memorandum was prepared and distributed to observers to guide them in making observations

INSTRUCTIONS FOR OBSERVING THE SOLAR ECLIPSE ON JANUARY 24TH, 1925

The object of the survey being handled by the Test Department is to determine, if possible, the southern edge of the shadow of totality

For this purpose a certain number of Test Department employees will be detailed to definite posts throughout the city. Each observer will be assigned to a foreman and will report to that foreman promptly at 7:30 AM Saturday morning at the location that will be specified. Each man should be equipped with a watch standardized at 92 Vandam Street on Friday afternoon. These watches should be again checked on Saturday morning as soon as the observers arrive at 92 Vandam Street. At each location there will be stationed two observers

OBSERVER A This observer will look a little north of west to watch the oncoming shadow. This shadow will be coming towards the observer from the West at the rate of a little faster than one mile per second. The observer should therefore look out over the New Jersey Shore of the Hudson River and try to follow the shadow

immediately as it appears and ascertain if the edge of the shadow passes to the north of him or to the south of him. This shadow will be quite definite and will appear as resulting from a cloud passing before the sun

OBSERVER B This observer will be watching the sun through black films with which he will be provided. His object is to see if the sun entirely disappears behind the moon or if a crescent-shaped portion of it stays uncovered. The observer should be very careful not to confuse the lights that may be seen around the moon with the fine crescent shaped portion of the sun. It is quite likely that even though the sun disappears entirely behind the moon there still may remain light all round the dark surface of the moon. These lights are due to the corona and other various effects

As soon as totality is over, (i.e., after the shadow passes over) or if the observer happens to be outside of the path of totality, and he sees that the crescent shaped portion of the sun has begun to increase in size, he immediately should leave his post and report back to his foreman at the same location where he reported to him before going to his post

The foreman will then bring all his men to No 92 Vandam Street over the shortest possible route

Letter to the Chairman of the Committee, forwarding results of survey

Mr C L Law *Chairman*

In accordance with your request, we are forwarding herewith a brief report of the results of the survey which was conducted by the Test Department on Saturday, January 24th, 1925 to establish, if possible, the line between the area of total eclipse and the area of partial eclipse. The report given herewith is mainly a somewhat more detailed statement than the preliminary notes which were placed in your hands last Saturday at 1:00 p.m. Forwarded as part of the report are two (2) plates, Plate No 1 showing the results plotted directly on a section of the map of Manhattan Island, and Plate No 2 which becomes a part of the report. This Plate No 2 consists of a half page of The New York Times of January 23rd, 1925 and on the map shown on this page, there has been inserted a line which was established by the Test Department survey

In addition, we are forwarding notes which have been prepared covering the single group of Test Department observers, who conducted some photometric tests on a hill near Dunwoodie Substation in Yonkers. As indicated in this brief report of the photometric work, it will be necessary to work up the actual photometric measurements before results can be reported. With this report of the photometric measurements are forwarded three photographs showing the apparatus itself and the method of use

F V MAGALHAES
Superintendent
Meter and Test Departments



Group of Observers on Roof of Building

Report submitted to the Chairman of the Committee of the Survey conducted on Saturday, January 24, 1925, to determine the location on Manhattan Island of the southern edge of the shadow of total eclipse

The survey was made by The New York Edison Company through its Test Department organization to locate, if possible, the line made across the city by the southern edge of the shadow of total eclipse. The anticipated location of the line as calculated by astronomers was on the line of 110th Street with a possible variation of the line one mile either way. The following is a brief statement of the manner in which the survey was organized and conducted, and forwarded herewith is a map showing graphically the results obtained and the location of the line which was established

A group of one hundred and forty-nine (149) observers was organized under the direction of the Test Department. This group was divided into squads of two or three men, all squads being assigned to specific locations

on the roofs of apartment houses lying along the western edge of Manhattan Island from 72nd Street to 135th Street. The observers were placed at 73 locations, mainly on Riverside Drive, but also on West End Avenue, Broadway and Amsterdam Avenue. These locations on the western edge of the city had an outlook over the Hudson River as well as an unobstructed view of the sun to the East. Three locations were selected off the eastern edge of Manhattan Island, one being on the property of the Astoria Light, Heat and Power Company and the other two locations being on the spans of the Connecting Bridge of the N Y N H & H R R which extends from The Bronx to Long Island

The squad at each location was divided into Observers (A) and (B) and each group given specific instructions, copy of which is attached

Observer (A) was to watch the surface of the river and ground and report whether the edge of the shadow was to the north or south of where he stood

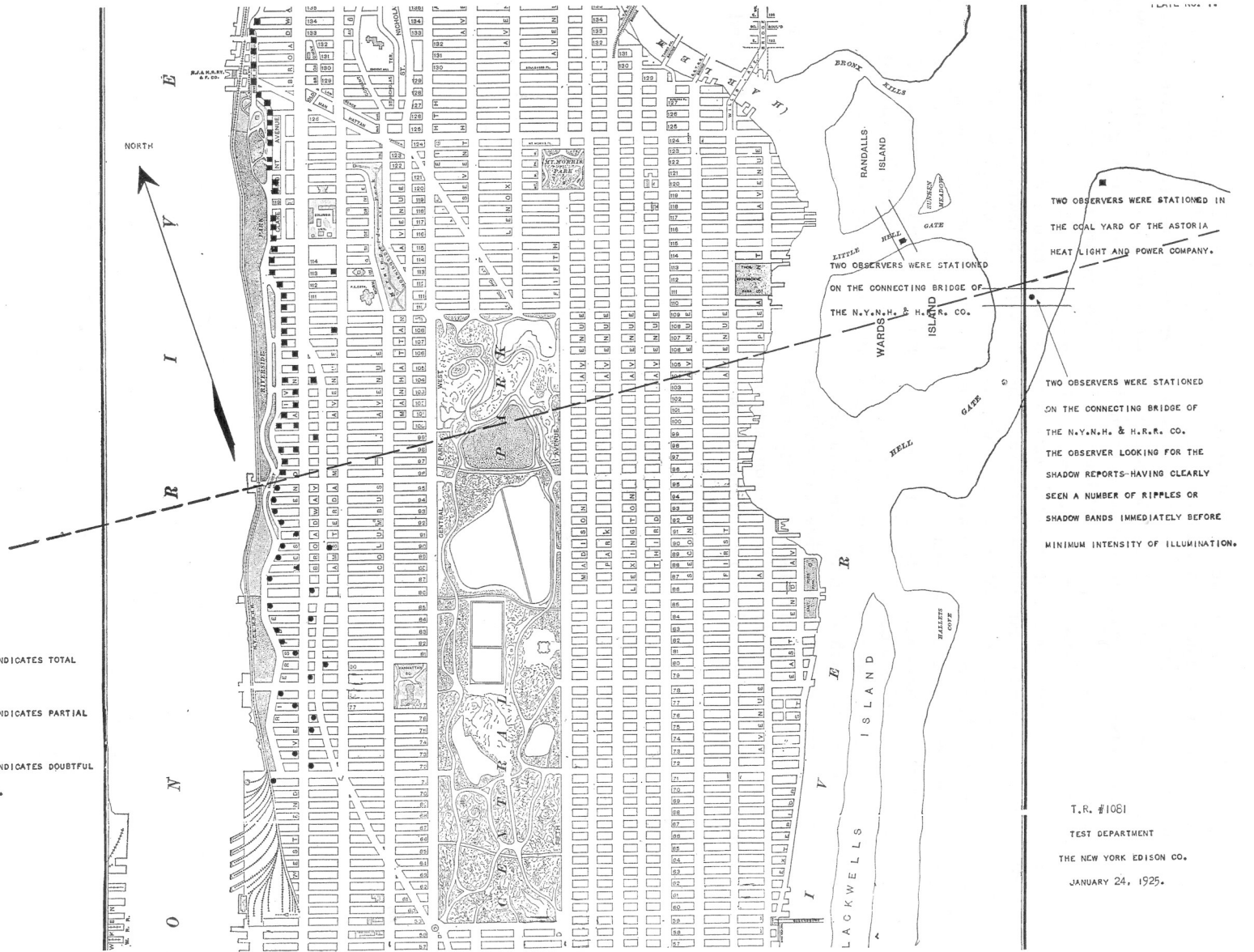
Observer (B) was to watch the sun itself through a piece of heavily exposed photographic film and to report whether the sun was completely covered by the shadow of the moon or only partially covered. An analysis of the individual reports of the men as they returned from the field resulted in an unanimous report from Observers (A) that the effort to observe the approach of the edge of the shadow from its position on the surface of the earth was entirely ineffective and no data whatsoever towards the establishment of a clear line could be obtained. The results of the (B) Observers—those who watched the sun itself—were very definite and consistent

When all these reports were analyzed and plotted, it was possible to establish a definite line between No 230 Riverside Drive (just south of 96th St) and No 240 Riverside Drive (just north of 96th St). The distance between the observers on the roofs of these two buildings was approximately 225 ft. This distance of 225 ft being the space within which lay the line, on one side of which could be seen the total eclipse and on the other

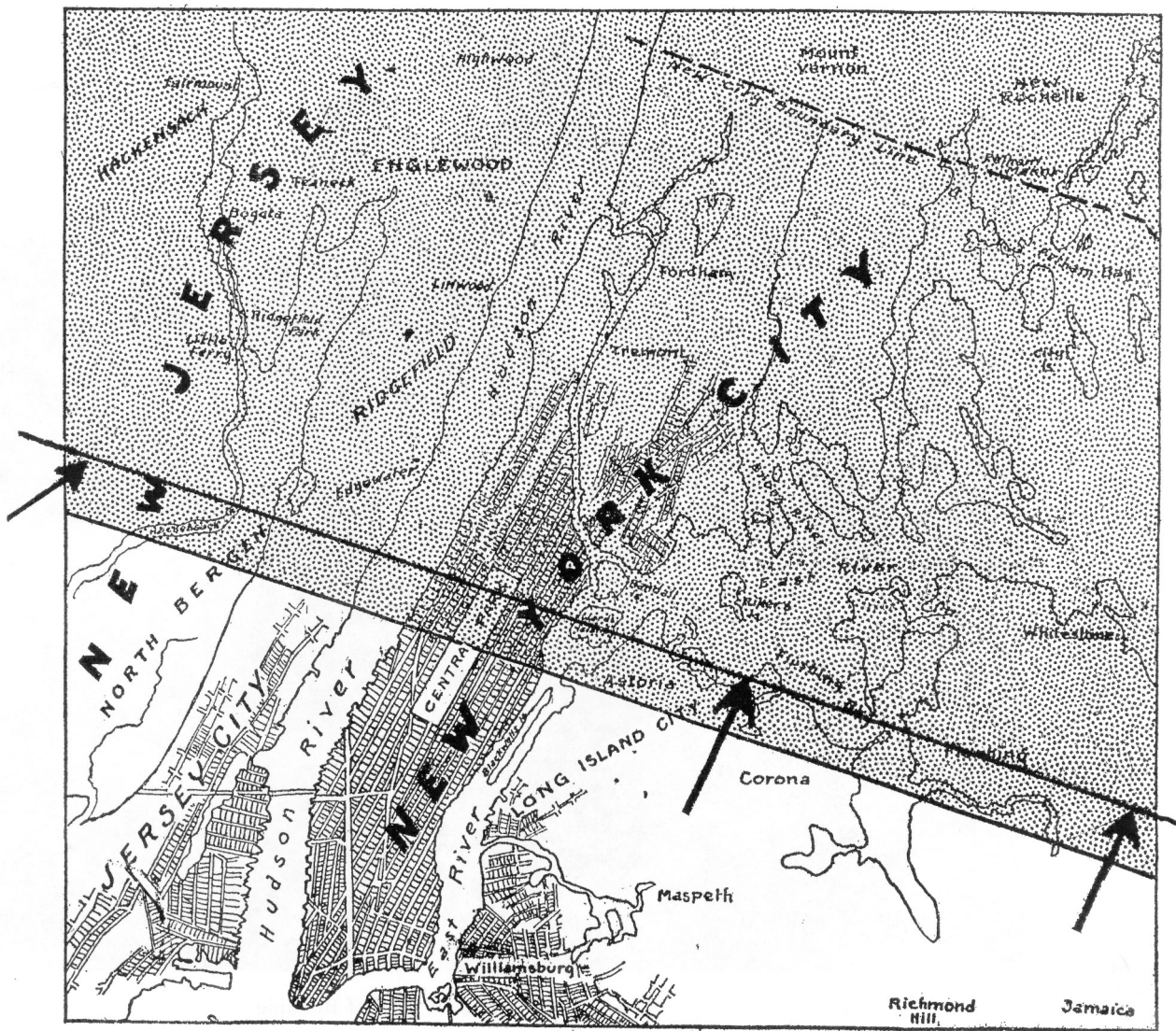
side which could be seen only the partial eclipse. On the Eastern side of Manhattan Island, three groups of observers reported, two as having seen the total eclipse and one as having seen the partial eclipse. The distance between the two nearest groups being about 750 ft

The points thus located on the east and west margins of the Island permit the establishment of the line as shown on one of the attached maps. The second map forwarded herewith is a copy of the one which appeared in The New York Times on Friday, January 23rd, showing the anticipated band of totality across Manhattan Island and a line has been inserted on this map which is the one established by the survey made above. As can be seen the dotted line runs parallel to the calculated line but slightly displaced to the north

F V MAGALHAES
Superintendent
Meter and Test Departments



Graphic Reproduction of the Results of a Survey Undertaken to Establish the Line Showing the Southern Edge of the Shadow of Total Eclipse



THE CITY SECTION OF THE PATH OF TOTALITY.

The black line marks the probable southern limit of the belt of totality in New York City and its environs. Because, however, astronomers do not know the exact position of the moon, there is a possibility that this line, as indicated here, may be half a mile too far south or the same distance, more or less, too far north. Therefore it is advised that observers, to insure being well within the path of totality, take up their position at least twelve blocks north of the line, which crosses Manhattan about Eighty-third Street.

Clipping from The New York Times, January 23, Showing the Anticipated Band of Totality Across Manhattan Island, with the Line Established by the Survey Indicated by Arrows

Measurements of Natural Light During the Solar Eclipse of January 24, 1925

The report of the photometric measurements made to determine the intensity of illumination during the period of the eclipse is here given

Photometrists of The New York Edison Company's Test Department staff were located during the eclipse at a hill near the Dunwoodie Station of The Yonkers Electric Light and Power Company

Photometric settings of horizontal illuminations were made from 7:00 A M to 11:00 covering the various phases of the eclipse, including that of minimum light during totality

Taking advantage of the fact that the Electrical Testing Laboratories of New York City were co-operating with certain of the universities and others, under Illuminating Engineering Society auspices, to make similar determinations of natural light well within the band of totality, these New York Edison Company photometrists secured from the Electrical Testing Laboratories a set of special colored filters and absorbing glasses with the aid of which they might measure throughout its great range, the intensity of the natural light received on a horizontal surface from the sun or corona and from the sky. The photometrists with their instrumental equipment are shown in the first of the photographs on the following pages. The method of operation of the photometer is illustrated in the second photograph and the instrument itself with the special filters prepared particularly for work during this eclipse appears in the third. These filters are located in the diaphragms of the two wheels which for illustration are removed from their place in the photometer and placed above its lid. When in posi-

tion, any filter may be placed in the photometric axis, reducing as desired the light of day and changing its color to approximate that of the incandescent standard lamp of the instrument, or for work when the daylight is feeble for reducing the light of the standard lamp of the instrument, while modifying its color to agree with that of daylight

Curve "A" shows that as the sun started to rise, the intensity of natural illumination increased, but at about 8:15 A.M., the moon had covered enough of the sun to cause a decrease in illumination. This decrease in intensity of illumination continued until the beginning of totality which occurred at approximately 9:11 A M and lasted for about one and one-quarter minutes at the location where these observations were made. As totality was over, illumination started to increase again and at 11:00 A M, the illumination was that of a normal day. We have also shown a dotted straight line "B," which is substantially the way in which the intensity of illumination increases as the sun rises on a normal day.

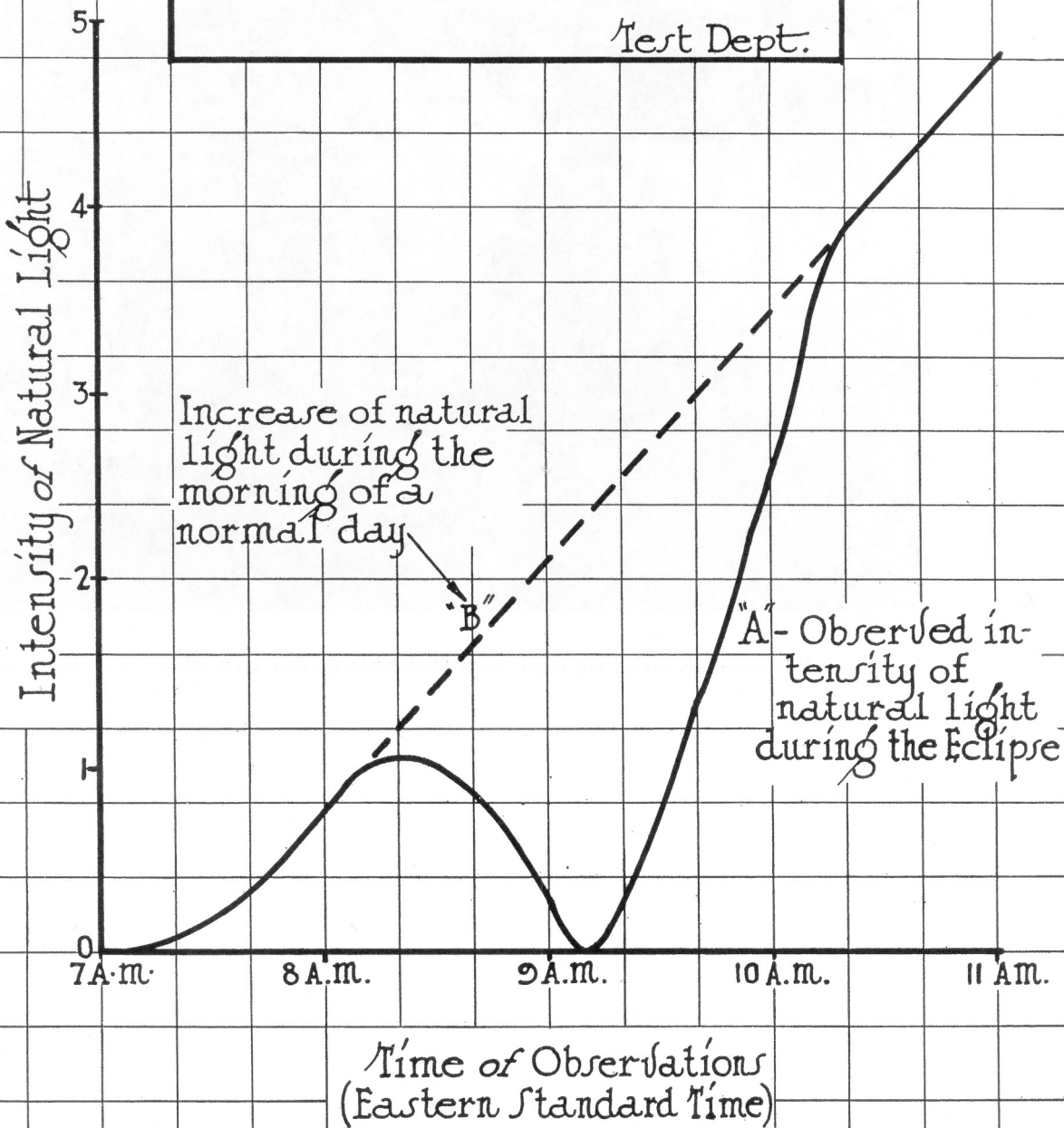
Curve "A" which is plotted to an arbitrary scale shows the general trend of variation in the intensity of light before, during and after the eclipse. During totality the intensity of normal light was very small, comparable to a moonlight night

F V MAGALHAES
Superintendent
Meter and Test Departments

The following chart shows results of measurements made with the Sharp-Millar Portable Photometer

The New York Edison Co.
 Results of Photometric
 measurements during
 Solar Eclipse of Jan. 24th 1925

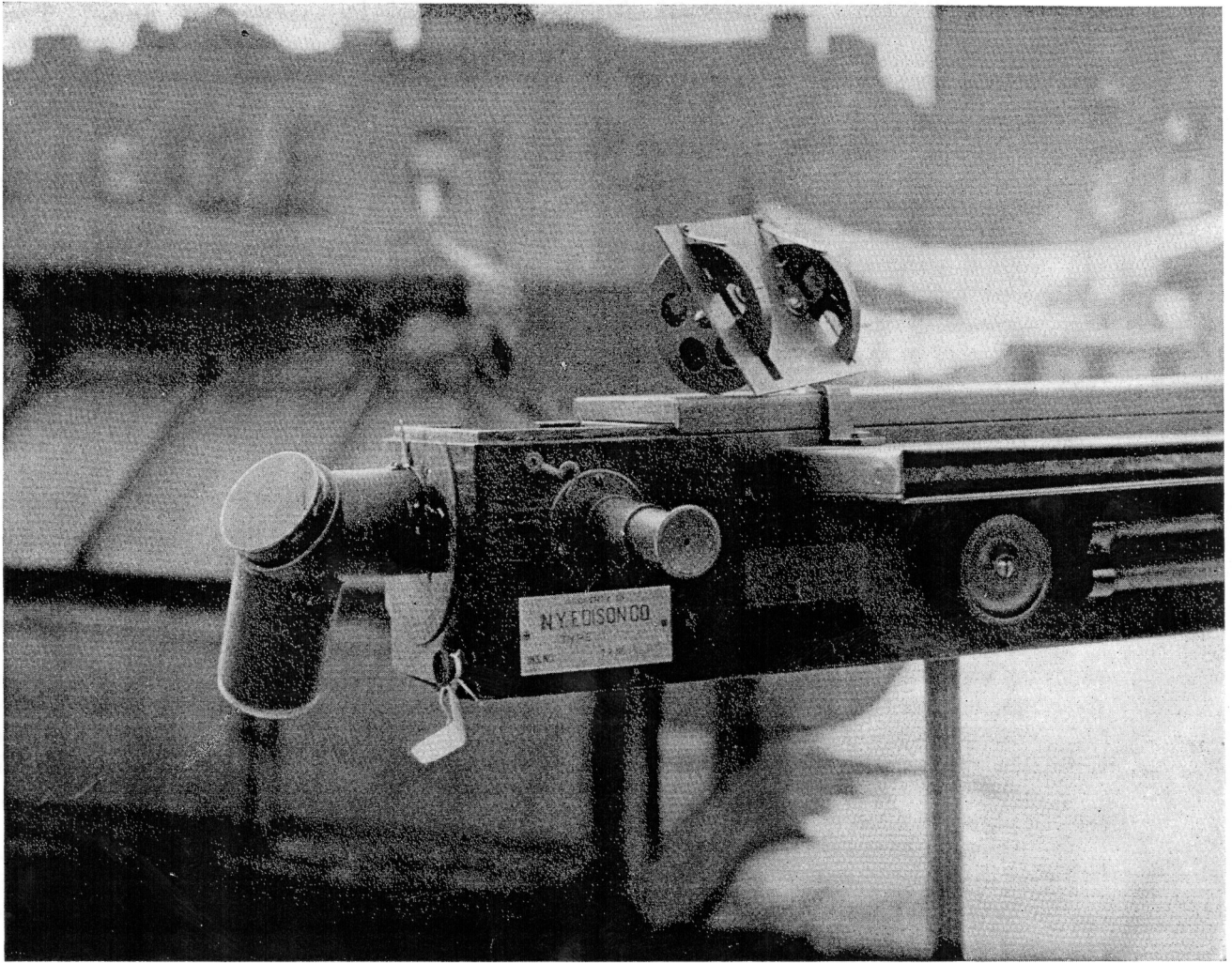
Test Dept.



Curve Showing Changes in Natural Light During Period of the Eclipse



Photometrists with Their Equipment Showing Operation of the Photometer during the Eclipse



The Photometer with Special Filters

Results of Measurements of Load Made at Distributing Stations During the Eclipse

results of the extensive measurements made at generating and distributing stations during the period of the eclipse are shown graphically in the curves which accompany the following statement

plan as previously outlined was followed in taking load readings during the period of the eclipse at the generating station, Waterside, and substations of The United Electric Light and Power Company, the New York Queens Electric Light and Power Company, the Westchester Lighting Company and The New York Edison Company, under the direction of

W H Lawrence Superintendent Waterside Station

C W Wilder General Superintendent Distributing Stations of The New York Edison Company

E W Gorry Superintendent of Sub-Stations The United Electric Light and Power Company

R E Dennis Assistant Chief Electrical Engineer Westchester Lighting Company

H C Dean General Superintendent New York and Queens Electric Light and Power Company

The load diagrams are shown on the following pages

The curves of the normal day, Saturday, January 17, are plotted from load readings taken at half-hour intervals.

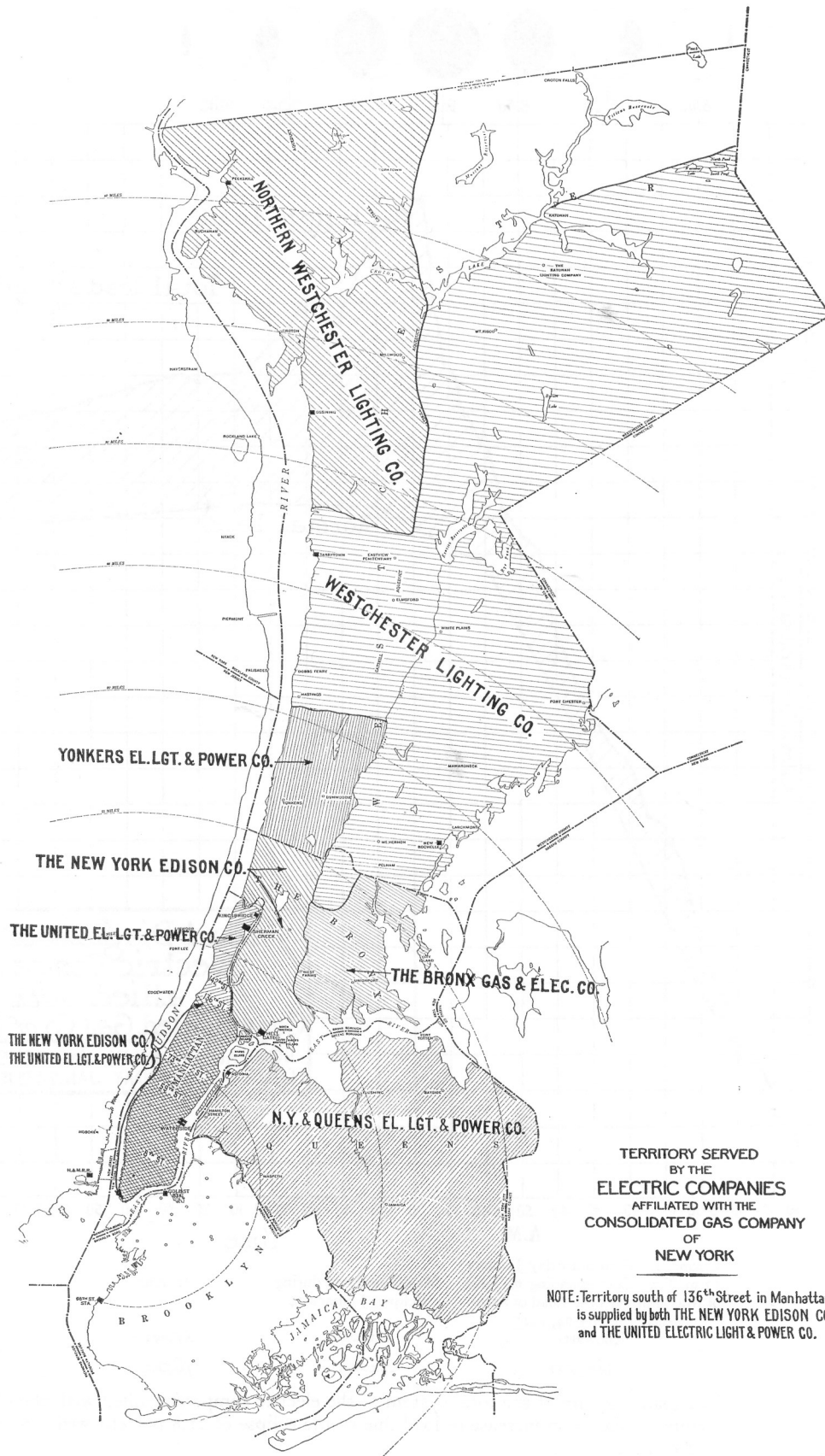
The curves of the eclipse load are plotted from load readings taken at the following intervals:

Before 8:00 and after 10:30 a m. 30 minutes

From 8:00 to 9:00 a m and from 9:25 to 10:30 a m 5 minutes

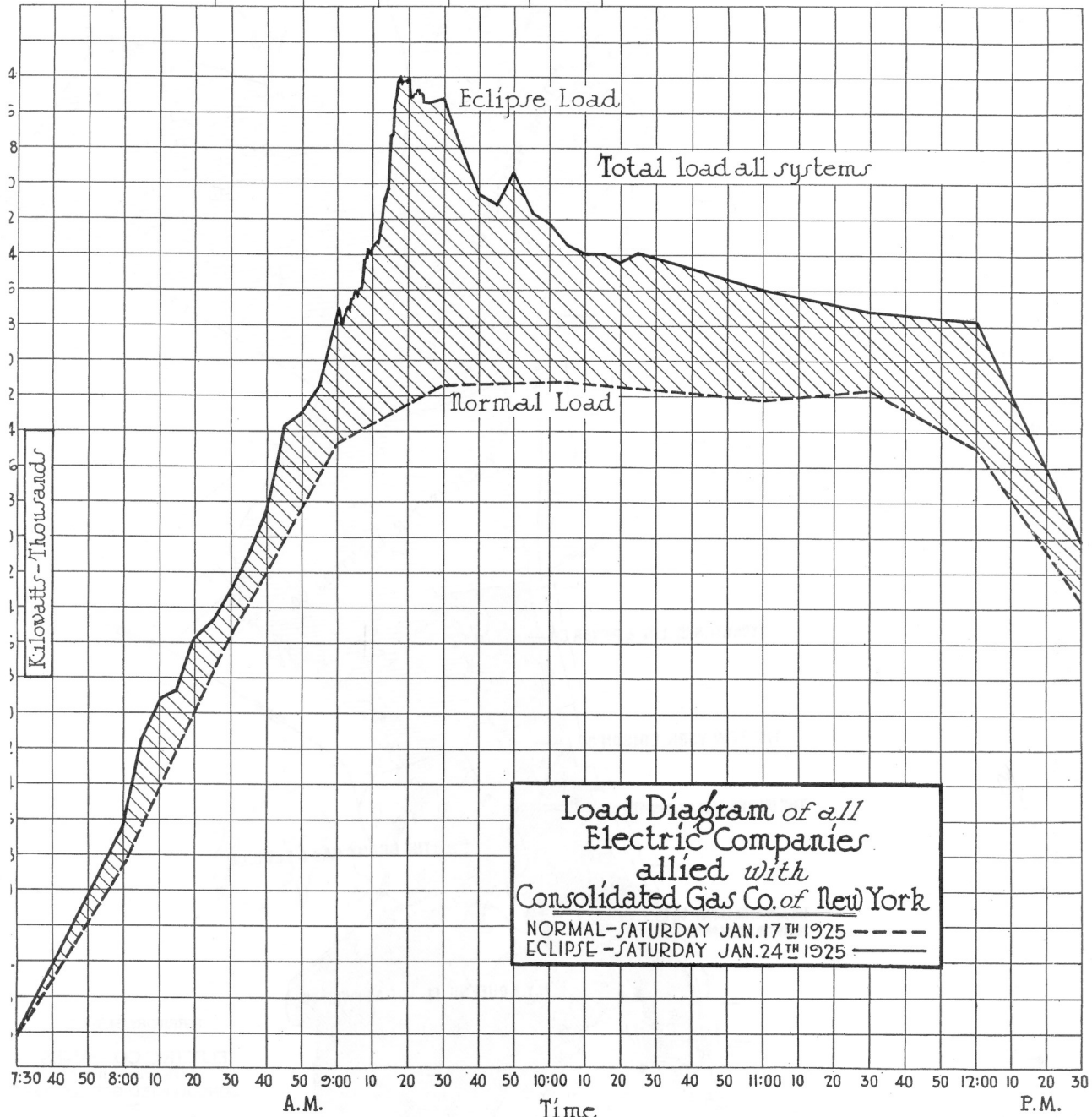
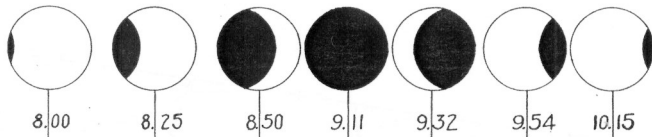
From 9:00 to 9:25 a m. ½ minute

In general the curves show an increase in load with increasing darkness, with the peak reached between five and ten minutes after totality, or the point of greatest darkness. Most of the curves show a slow decline in the load after totality



TERRITORY SERVED
BY THE
ELECTRIC COMPANIES
AFFILIATED WITH THE
CONSOLIDATED GAS COMPANY
OF
NEW YORK

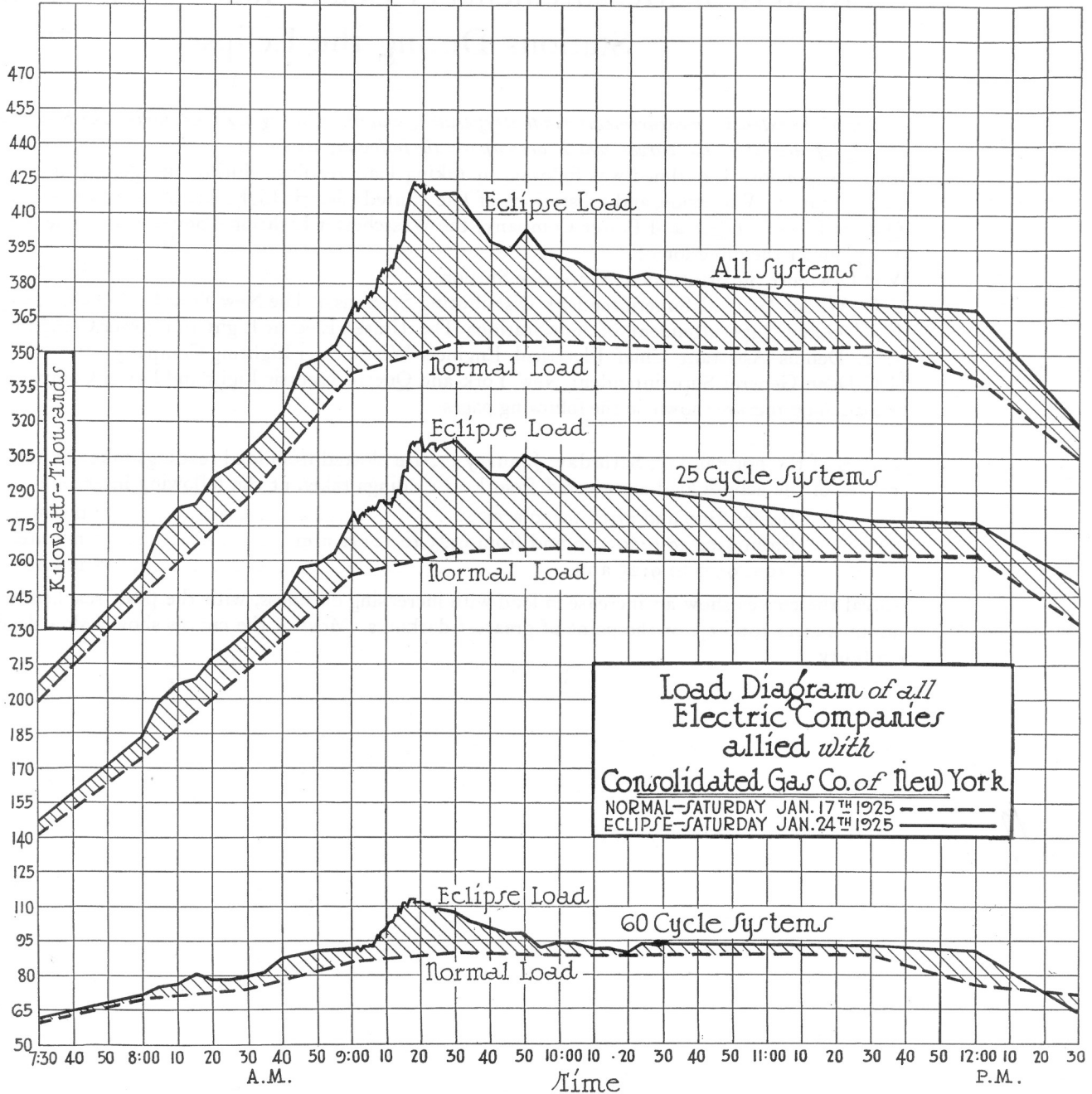
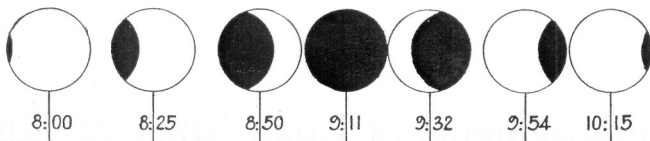
NOTE: Territory south of 136th Street in Manhattan
is supplied by both THE NEW YORK EDISON CO.
and THE UNITED ELECTRIC LIGHT & POWER CO.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925	Maximum Load during Eclipse, January 24	Increase	Increase
Kilowatts	Kilowatts	Kilowatts	Percent
348,000	424,000	76,000	21.8

The load diagram of the total system of the electric companies allied with the Consolidated Gas Company shows an increase of load due to the eclipse of 21.8 percent with the peak occurring at 9:18 o'clock

The sharp increase between 9:00 o'clock and 9:18, and the slow decrease covering the rest of the morning are characteristic of peak loads due to sudden darkness



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925

	Kilowatts
25 Cycle	260,000
60 Cycle	88,000

Maximum Load during Eclipse, January 24

Kilowatts
312,000
112,000

Increase

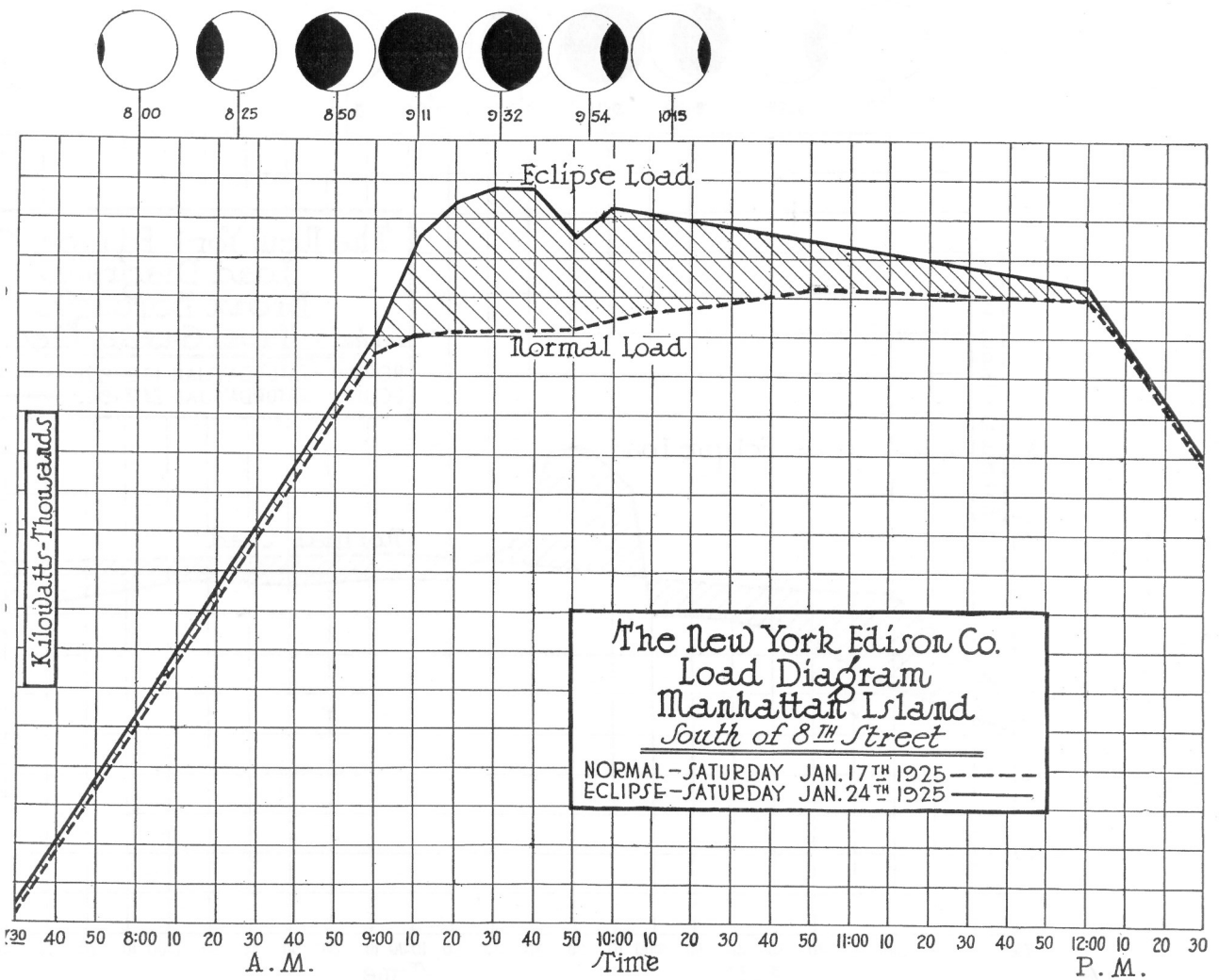
Kilowatts
52,000
24,000

Increase

Percent
20
27.3

The 25 cycle load supplies Manhattan South of 135th Street, while the 60 cycle load includes Manhattan above 135th, Bronx, Yonkers, Queens and Westchester County. Both loads were near normal until about 9:00, with peaks at 9:18. The 60 cycle load returned to normal 50 minutes after the peak load but the 25 cycle load was high until noon.

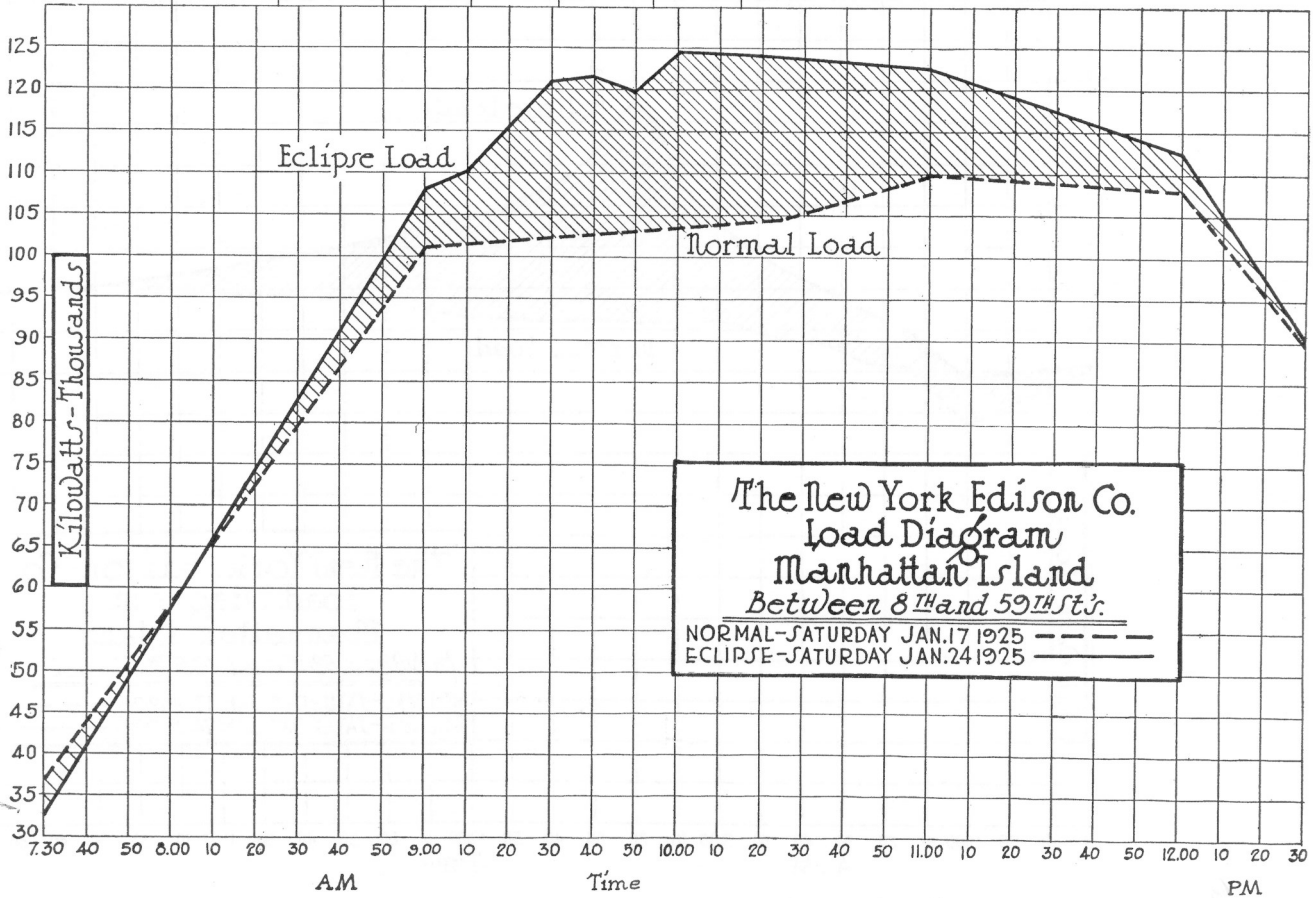
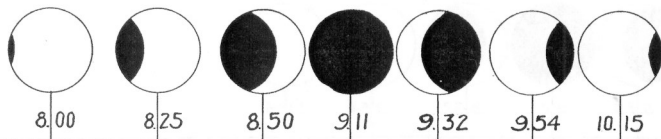
The 60 cycle load is mostly residential, and the curve shows a demand in accordance with the need for illumination, with a slight lag on the decline from the peak load. The 25 cycle load is largely commercial, and this is shown in the much greater lag in the decline from the peak load. Evidently in many offices and stores where the lights were turned on during the period of darkness, they were not turned off for the rest of the morning. The minor peak in the 25 cycle load at 9:50 was due to the opening at that time of many stores which had permitted their employees to view the eclipse.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
57,500	67,000	9,500	16.5

The increase in the load on Manhattan Island, South of 8th Street, on the day of the eclipse corresponded to that of the preceding Saturday up to 9:00 o'clock, from which point the load continued on a sharp increase to a maximum of 67,000 kilowatts, as compared with 57,500 kilowatts on the preceding Saturday, January 17

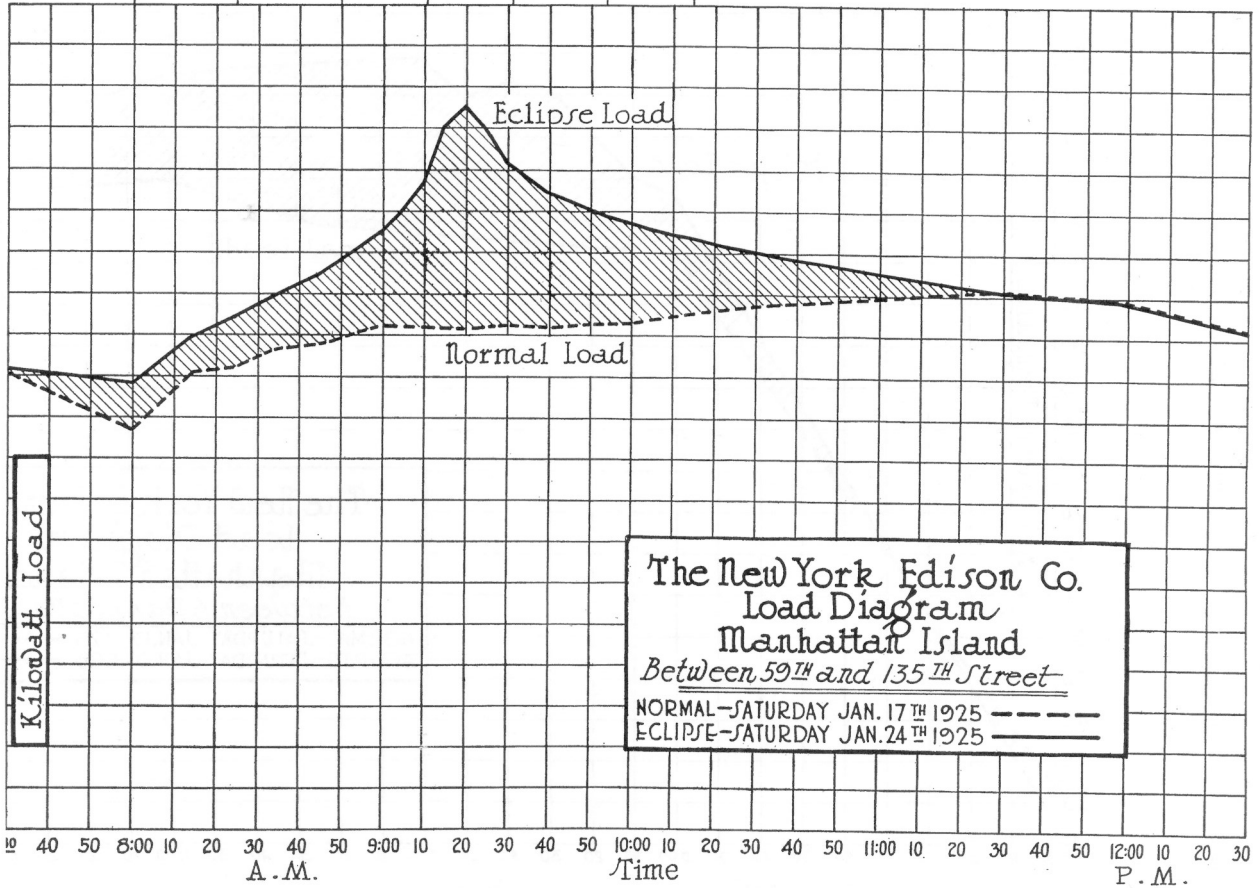
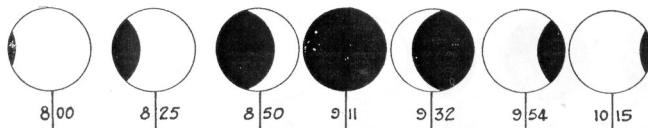
The load began to fall off sharply at 9:40 after totality due to the turning off of lights by those who were in offices and industrial establishments. This decrease was checked and a sharp increase took place from 9:50 to 10:00 o'clock, due possibly to the turning on of lights as on a normal business day by those who returned to their offices after being outside observing the eclipse



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925	Maximum Load during Eclipse, January 24	Increase	Increase
Kilowatts	Kilowatts	Kilowatts	Percent
103,000	124,500	21,500	20.9

The increase in the load on Manhattan Island between 8th and 59th Streets on the day of the eclipse was similar to that of the preceding Saturday, up to 9:00 o'clock from which point the load continued to increase to a peak of 121,000 kilowatts at 9:40. In this district the increase continued to a maximum of 124,000 kilowatts as compared with 103,000 kilowatts on the preceding Saturday morning. This load held for some time, falling off only slightly up to 12:00 o'clock

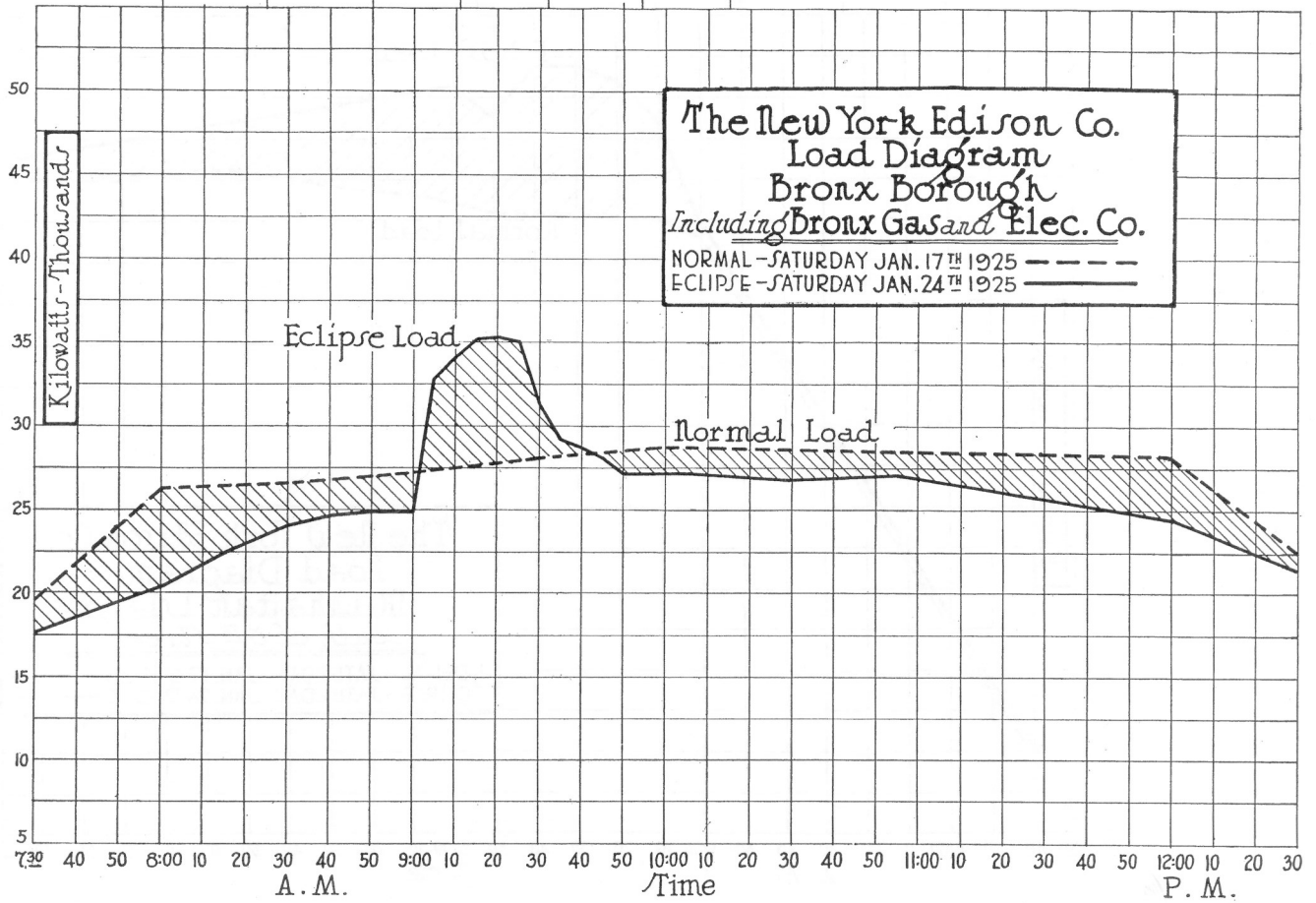
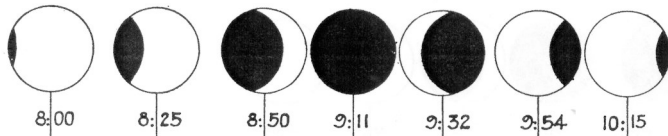
The failure to return to normal soon after the eclipse is the usual condition following any reduction in normal daylight, as people turn on lights and then neglect to turn them off. This is particularly true in offices and industrial establishments



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
35,500	48,500	13,000	36.6

Manhattan Island between 59th and 135th Streets is almost entirely residential. The lighting load increased steadily from 8:00 o'clock up to the maximum peak of 48,500 kilowatts, at 9:20, as compared with 35,500 kilowatts on the preceding Saturday. This fell off very rapidly, returning to normal at about 11:30 o'clock.

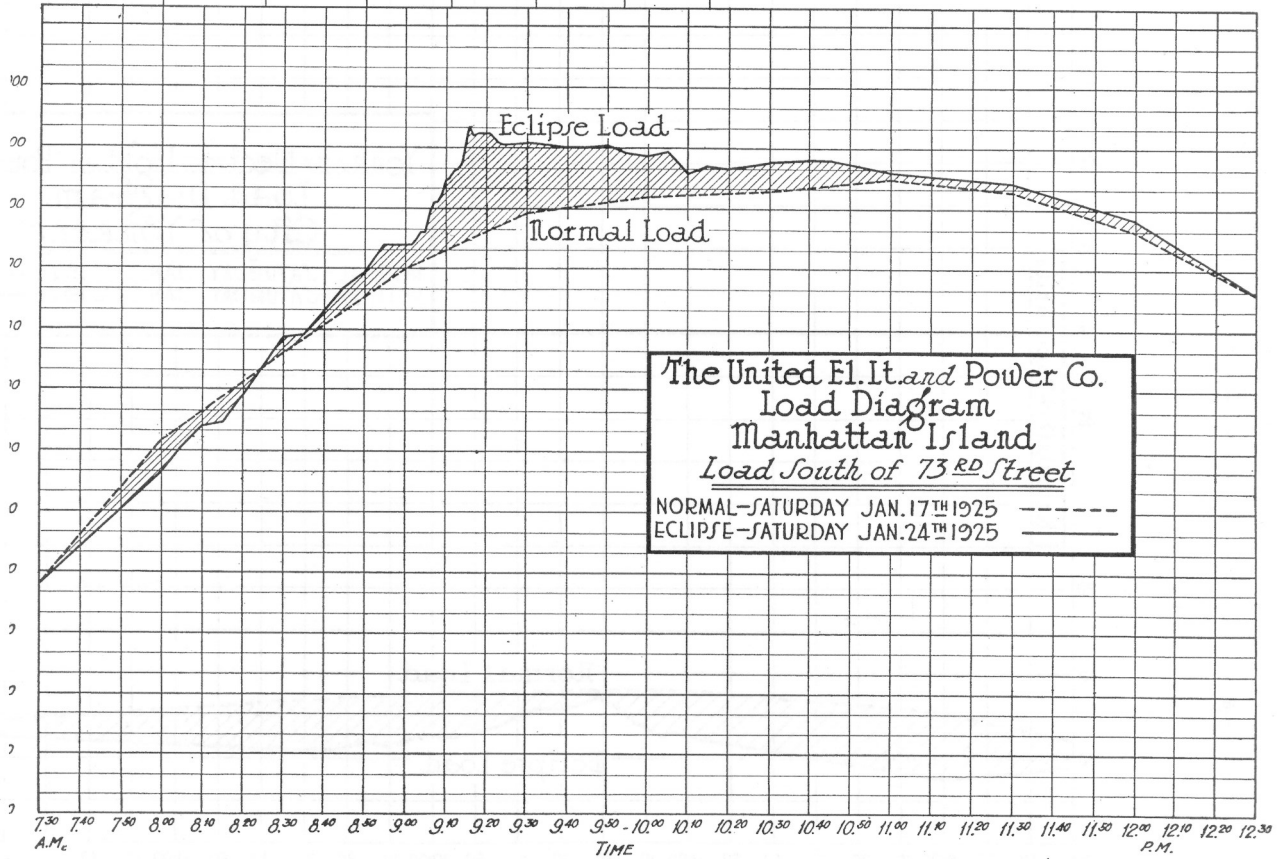
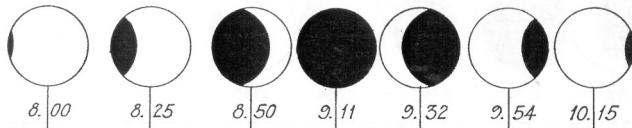
The reduction in the load following the peak at 9:20 was more rapid in this part of Manhattan than in the other parts, due probably to the habit of turning off unnecessary lights in residences more quickly than in offices and industrial establishments.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925	Maximum Load during Eclipse, January 24	Increase	Increase
Kilowatts	Kilowatts	Kilowatts	Percent
27,500	35,000	7,500	27.3

The load in the Bronx District did not come up to the normal load of the preceding Saturday until shortly before the total eclipse when there was a sudden jump, due to the darkness. Soon after totality the load fell to below normal where it remained for the rest of the morning

This was probably due to the fact that many of the smaller industries did not carry on their business as usual during that day

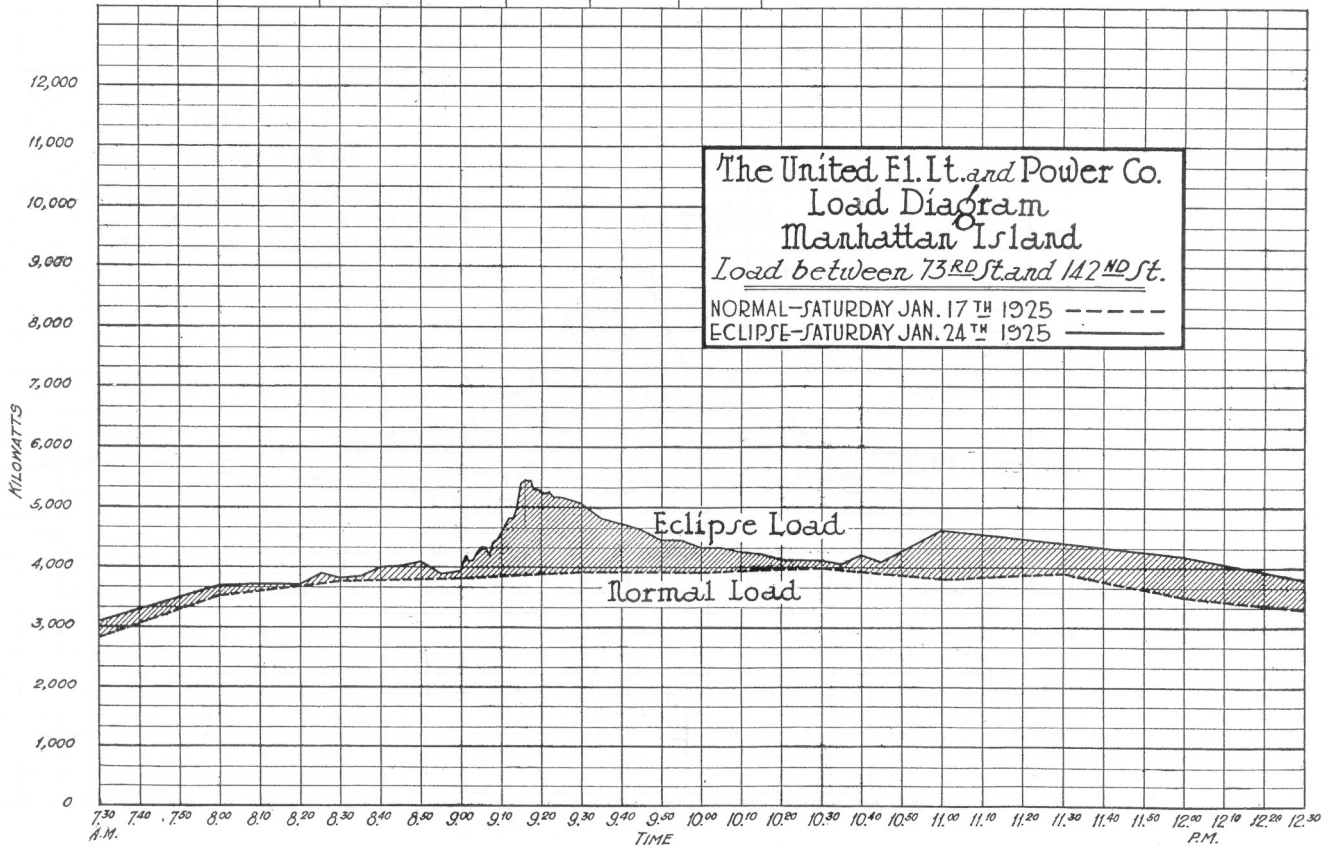
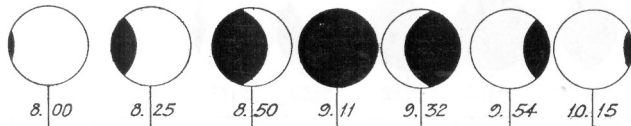


The United E. I. and Power Co.
 Load Diagram
 Manhattan Island
 Load South of 73RD Street
 NORMAL-SATURDAY JAN. 17TH 1925 -----
 ECLIPSE-SATURDAY JAN. 24TH 1925 —————

Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
9,500	11,340	1,840	19.4

The load for this district the morning of the eclipse corresponded closely with the normal load of January 17 before 9:02 and after 10:10 o'clock. Beginning at 9:02, the load rose sharply to a maximum at 9:16, about five minutes after the point of greatest darkness, then gradually declined until it reached normal fifty-five minutes later.

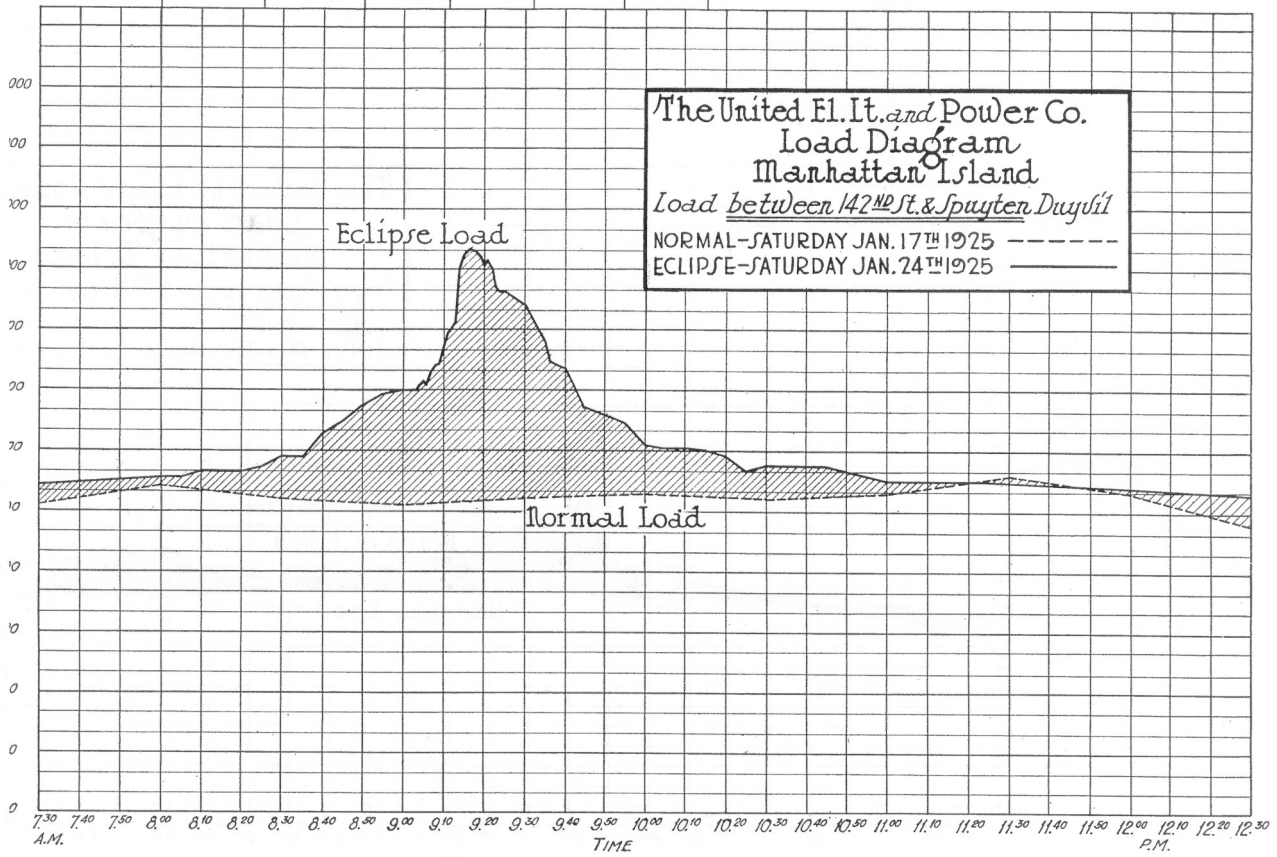
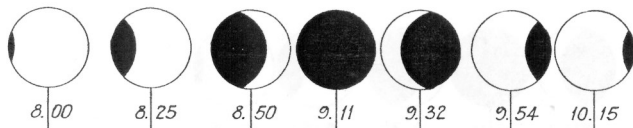
The curve of the eclipse load exhibits no unusual phenomena in its rapid rise during the period of increasing darkness, and in its gradual decline afterward.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
3,850	5,435	1,585	41.2

The eclipse load in this district began to ascend sharply at 9:00 o'clock, reached a maximum at 9:16, and then descended gradually till 9:35, when it was approximately normal. At about 11:00 o'clock there was a large addition to the load which remained on the lines for the rest of the morning.

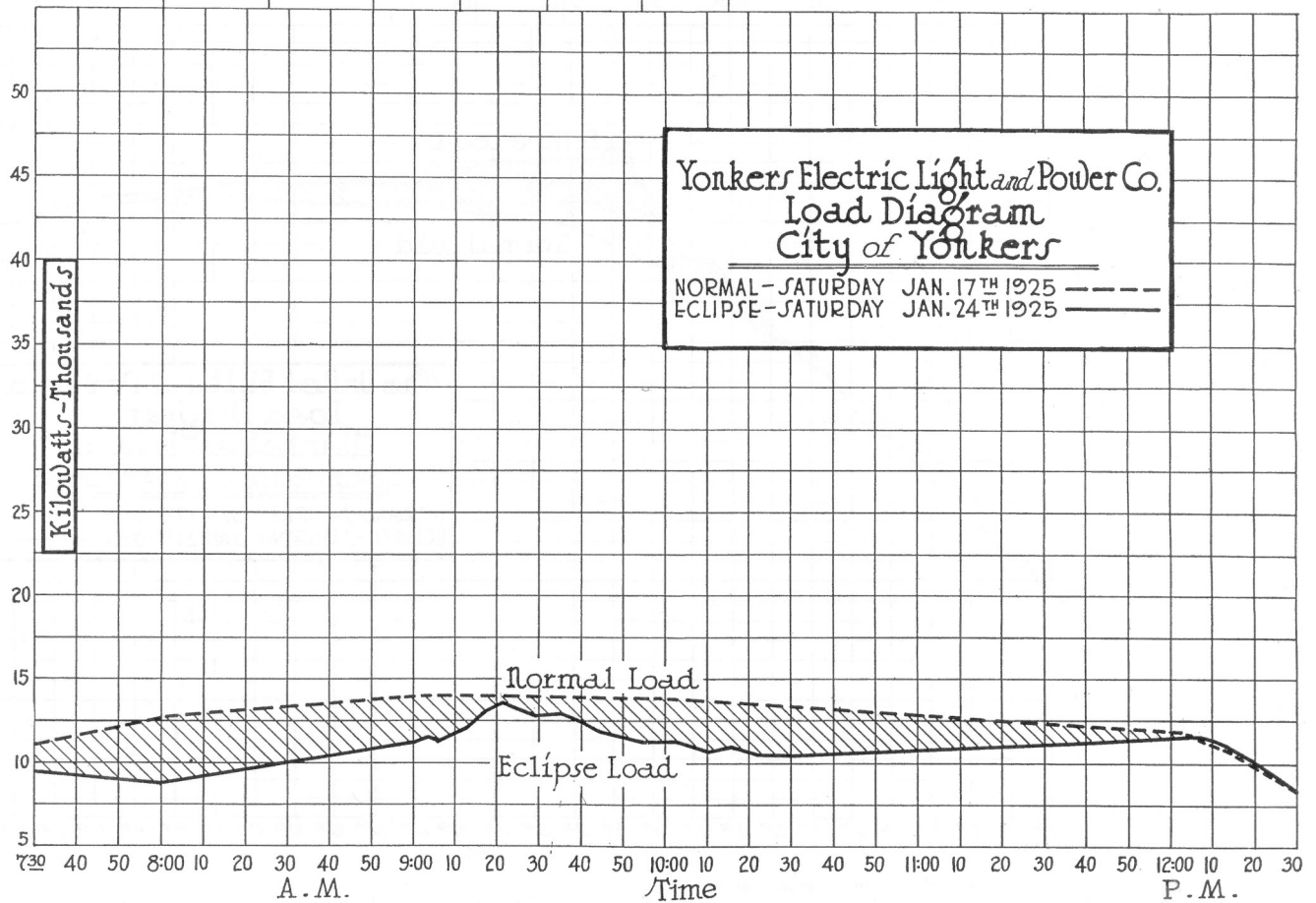
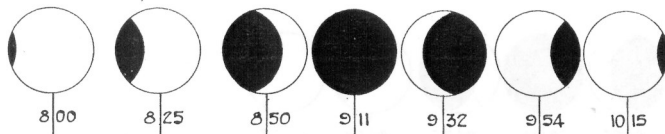
The fact that about two thirds of this district was within the zone of totality accounts for the large percentage increase in load during the eclipse. The addition to the load at 11:00 o'clock was probably due to a power demand, and has no great significance.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
5,170	9,340	4,170	80.7

In this district there was a large increase in load over normal between 8:35 and 9:03, then an exceedingly sharp increase until the maximum load was reached at 9:17 o'clock. The decline in load after totality extended over a period of a little more than an hour, when the load became nearly normal

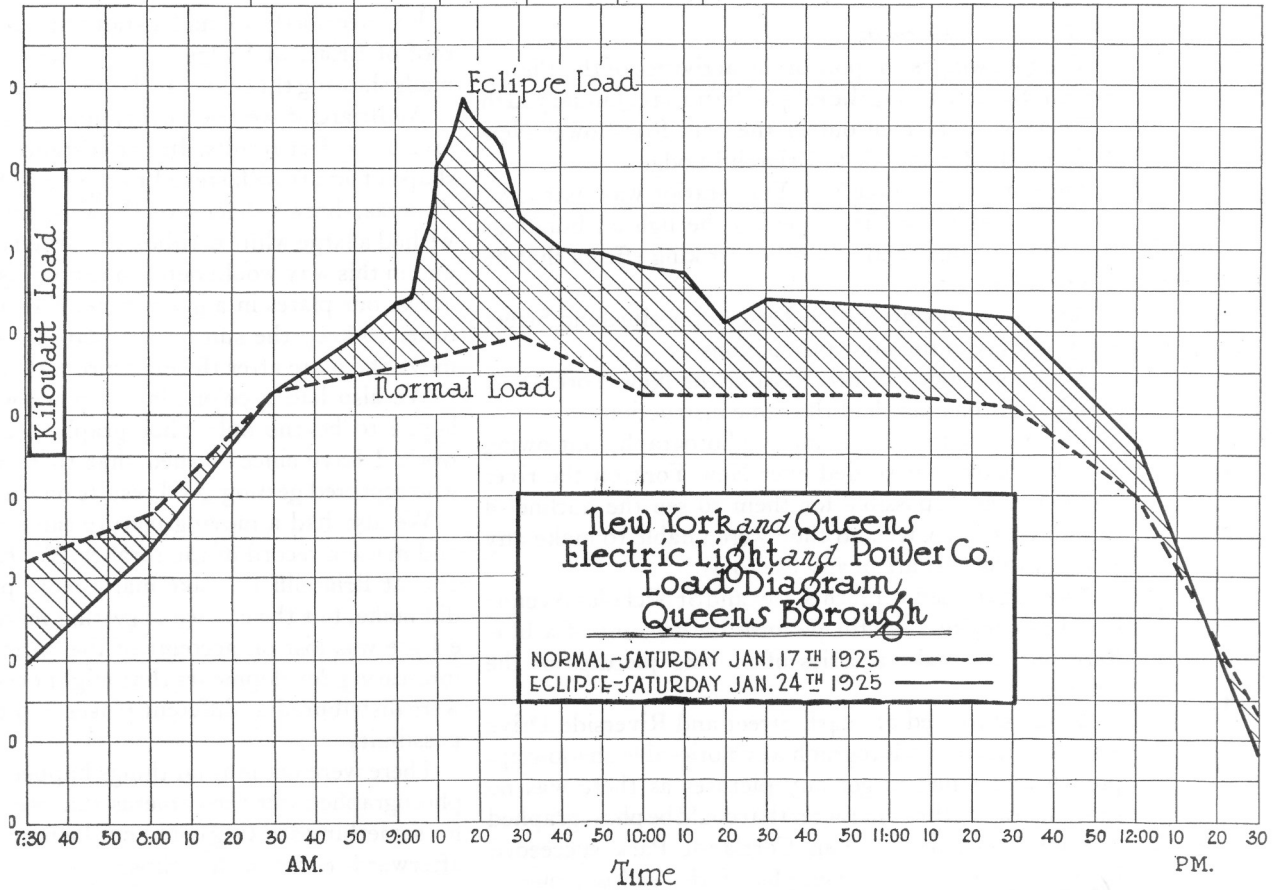
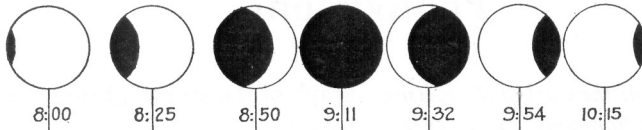
This district was entirely within the zone of totality, which accounts for the great increase in peak load over normal



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925	Maximum Load During Eclipse, January 24	Increase	Increase
Kilowatts	Kilowatts	Kilowatts	Percent
13,500	13,000	—500	—3.7

The load in the Yonkers District did not reach normal load of the preceding Saturday at any time during the morning although a small peak appeared about 9:22

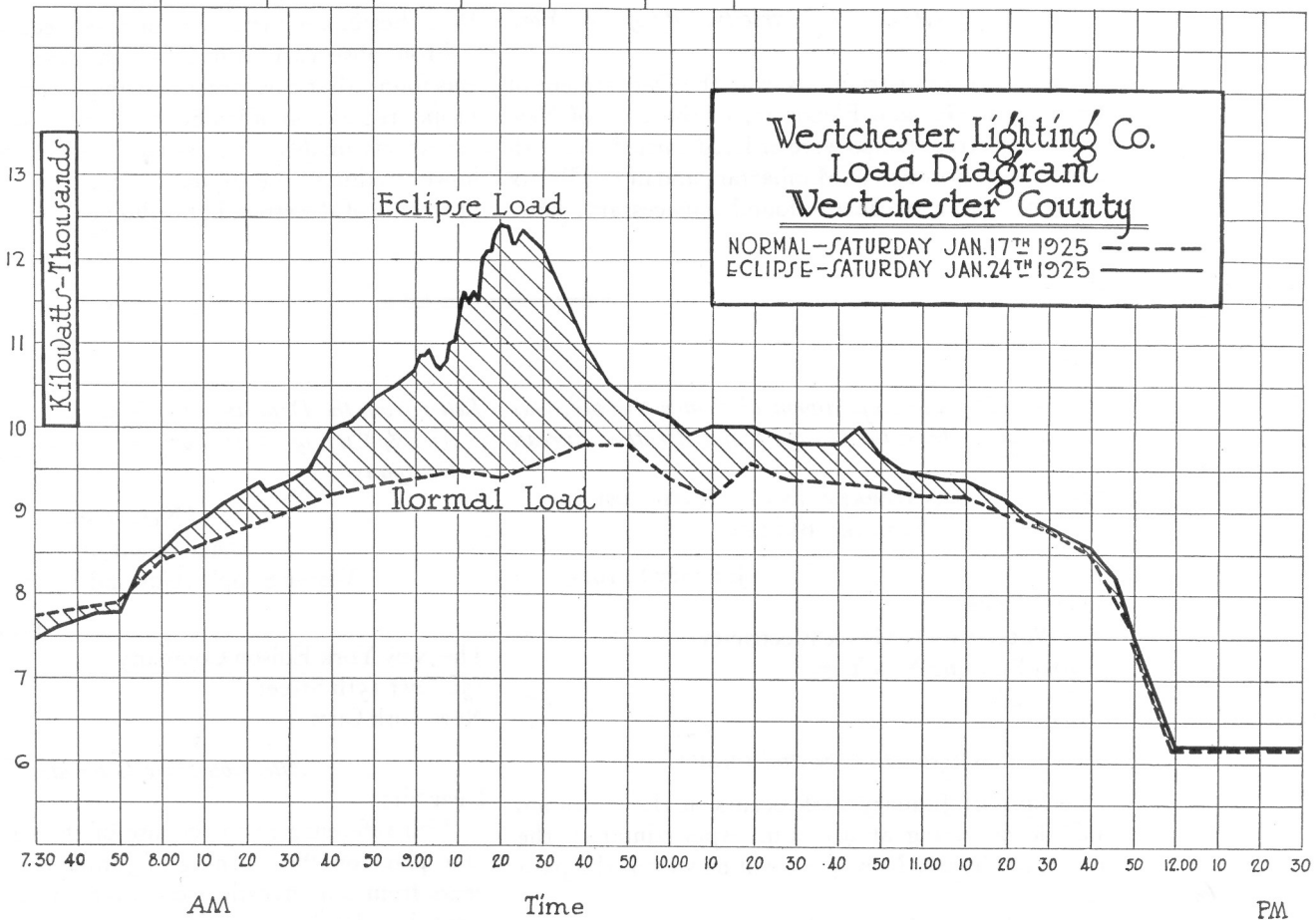
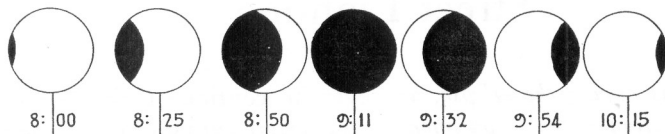
This was probably due to the fact that the industries in Yonkers did not open as usual, and that the peak at 9:22 was due entirely to a small portion of the lights in residences being turned on by people returning to their homes and offices after viewing the eclipse



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Percent
24,500	32,100	7,600	31.0

The load in Queens Borough began to rise sharply at 9:03 and reached a maximum at 9:17. It remained considerably above normal for the rest of the morning.

The load in Queens Borough is largely commercial, and as a result many of the lights which were turned on during the period of darkness at totality were not turned off again during the morning.



Normal Load on Saturday January 17 at Time Corresponding to Time of Maximum Eclipse Load of Saturday, January 24, 1925 Kilowatts	Maximum Load during Eclipse, January 24 Kilowatts	Increase Kilowatts	Increase Per cent
9,400	12,456	3,056	32.5

The increase in the eclipse load began at 8:40 and ended with a maximum of 12,456 kilowatts at 9:20 o'clock. The decline in the load continued until about 9:50 when the load became approximately normal

This curve exhibits no unusual changes in its rise to the peak, and in its fall after totality

Street Lighting

port of the lighting of the streets during the eclipse, as
done in accordance with the direction of the Department
of Water Supply, Gas and Electricity, City of New York

accordance with instructions from the Department of
Water Supply, Gas and Electricity of the City of New
York, all city street lamps were ordered turned on north
of 2nd Street, Borough of Manhattan, and in The Bronx
District, at 8:40 a. m. It was found unnecessary, how-

ever, to continue their operation after 9:30 a. m. The
lamps were extinguished in the various municipalities in
Westchester County as was deemed necessary

From observations made on the streets of the city, it
was found that this street lighting was necessary for the
proper regulation of traffic and general safety. From ob-
servations made in the outlying districts of the city,
however, due to the ground being covered with snow the
operation of the street lights did not seem necessary

Letter received by the Department of Water Supply, Gas
and Electricity from the United States Weather Bureau

UNITED STATES DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

January 8, 1925

Nicholas J Kelley
Department of Water Supply Gas & Electricity
Municipal Building New York
Dear Mr Kelley

Re: yours of the 2nd instant

The eclipse of January 24th occurs in the morning,
middle occurring at 9:10 a. m. Approximately the
south half of Greater New York will be within the path
of totality

If the sky is clear there will be no need for street light-
ing during the brief period of total obscuration, when
illumination will be roughly comparable to bright
daylight without the latter's accompanying shadows

However, the sky is clouded, while street lighting
will not be absolutely necessary, it will prove a con-
venient convenience

Outdoor lighting will be generally resorted to
as mentioned in the Scientific American for January 1925
where Henry Morris Russell is interesting and illuminating

Respectfully

(Signed) JAMES H SCARR
Meteorologist

Letter from the Department of Water Supply Gas & Elec-
tricity, City of New York to The New York Edison
Company

City of New York
Department of
Water Supply, Gas and Electricity

January 16, 1925

The New York Edison Company
130 East 15th Street
New York City

Attention Mr S G Rhodes

Dear Sirs

With reference to the eclipse of the sun, which is to
take place on the morning of January 24, 1925, it ap-
pears from our investigations that, in the event of the
sky being cloudy at the time of total or almost total ob-
scuration, it will probably be desirable, for the protec-
tion of traffic, to light the public street lamps

This department, therefore, feels that provisions should
be made for the lighting of street and park lamps in the
district that may be affected by the total eclipse

You are, therefore, directed to light all the public street
and park lamps in your district north of 72nd Street,
Borough of Manhattan, and in all of your district in the
Borough of The Bronx at 8:40 a. m and maintain same
lighted until 9:40 a. m on January 24, 1925

By direction of the Commissioner

Respectfully

(Signed) NICHOLAS J KELLEY
Chief Engineer of Light and Power

Photography

The following memorandum explains the work of the Edison Photographic Bureau in connection with the eclipse

Mr C L Law *Chairman*

The following is a report of the activities of the Photographic Bureau during the eclipse, Saturday, January 24th

There were 14 men out in the field from lower New York on the Jersey side to Briarcliff Lodge

The man at the lower New York station was instructed to photograph the City showing the lighted buildings during the eclipse and any other striking effects that he might see

Another man stationed in Jersey opposite 42nd Street ferry was given the same instructions

A man stationed in Brooklyn at the New York Dock Company's pier also had the same instructions

These three men made many photographs but owing to a fog bank that settled over New York on the river front, it was impossible for them to see the outline of buildings in the City and they were unable to make any photographs that are of any use to us

A man stationed at 148th Street and St Nicholas Avenue could not make any still pictures on account of a blue haze but did make a series of moving pictures of the eclipse

A man stationed at 124th Street and Riverside Drive was instructed to photograph any noticeable shadow approach and failed to get any pictures as there was no shadow of an outline character that could be photographed

A man stationed at Van Cortlandt Park succeeded in making several photographs of the eclipse; one of these photographs is interesting inasmuch as the newspapers reported that the scientific photographs failed to get the view of the corona which is commonly called the diamond ring. He also succeeded in getting a photo-

graph of the street lighting in that section at the time of totality

Further north, we had a staff of photographers on the roof of Briarcliff Lodge where a series of pictures was made showing the eclipse including totality in that section

At Briarcliff we tried everything possible that would give us perfect results. In one instance, a marker in the shape of an arrow fastened to the rear of one of the large cameras, threw a shadow on the wall of the building where we had a large white cardboard marked off in time spaces and in this way would determine how fast the sun moved across our plates in a given time. This was necessary in order to keep the sun on the plate as we could not remove the plate after the exposure was started

We also had a color plate camera working and had hoped to be the only photographers to attempt color work. I have since learned that there were two others who reported getting good results on color plates

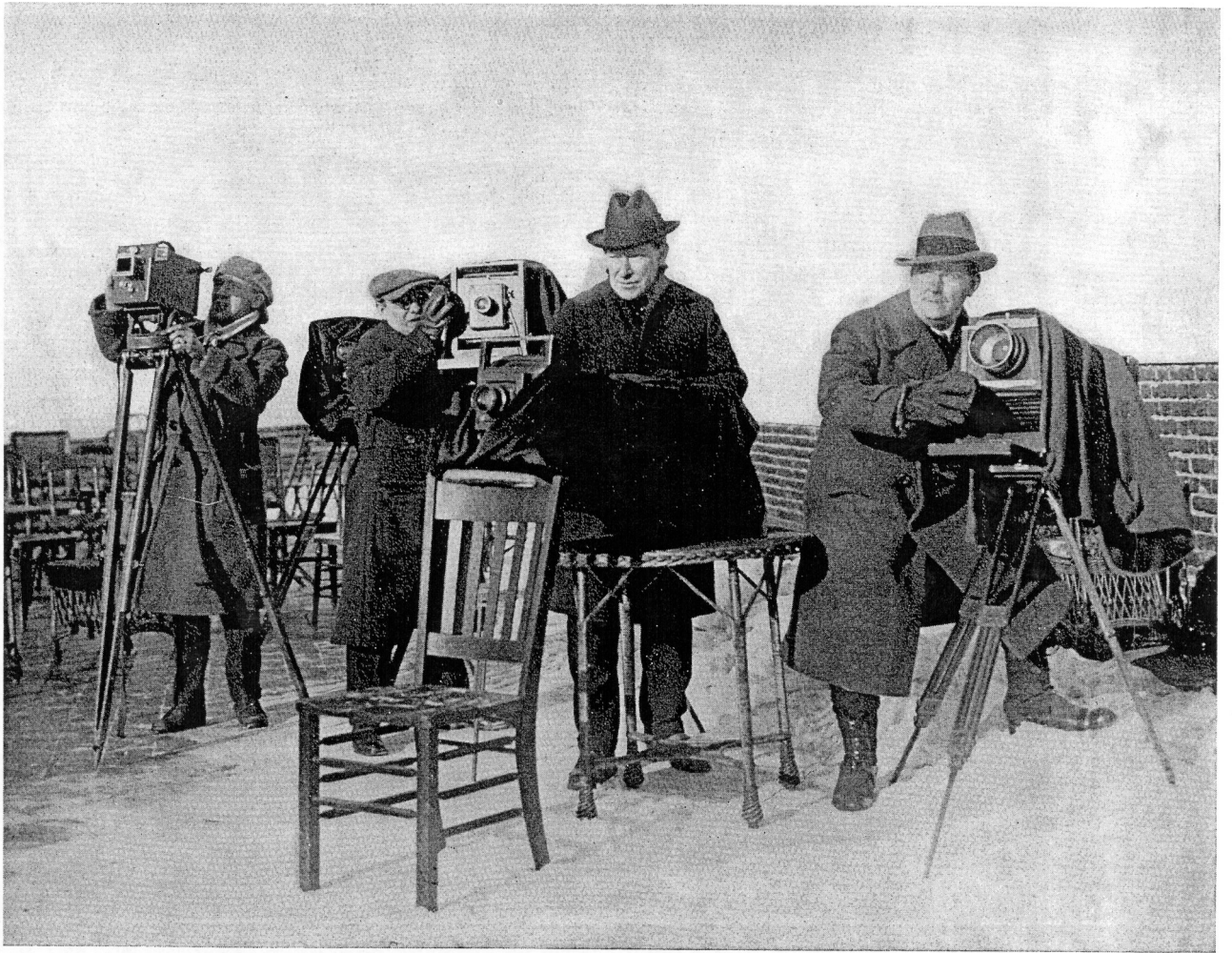
We also had a moving picture camera at this station and made a record of the totality. We had enough cameras at Briarcliff to make many more pictures than we did make, but the chance of getting more pictures of the eclipse was lost on account of the anticipation of other interesting developments that might occur. Our cameras were distributed at different places in order to cover this possibility

There were no unusual things happened that could be photographed but the cameras that were set up looking for something striking could not be moved quick enough afterwards to get in the eclipse

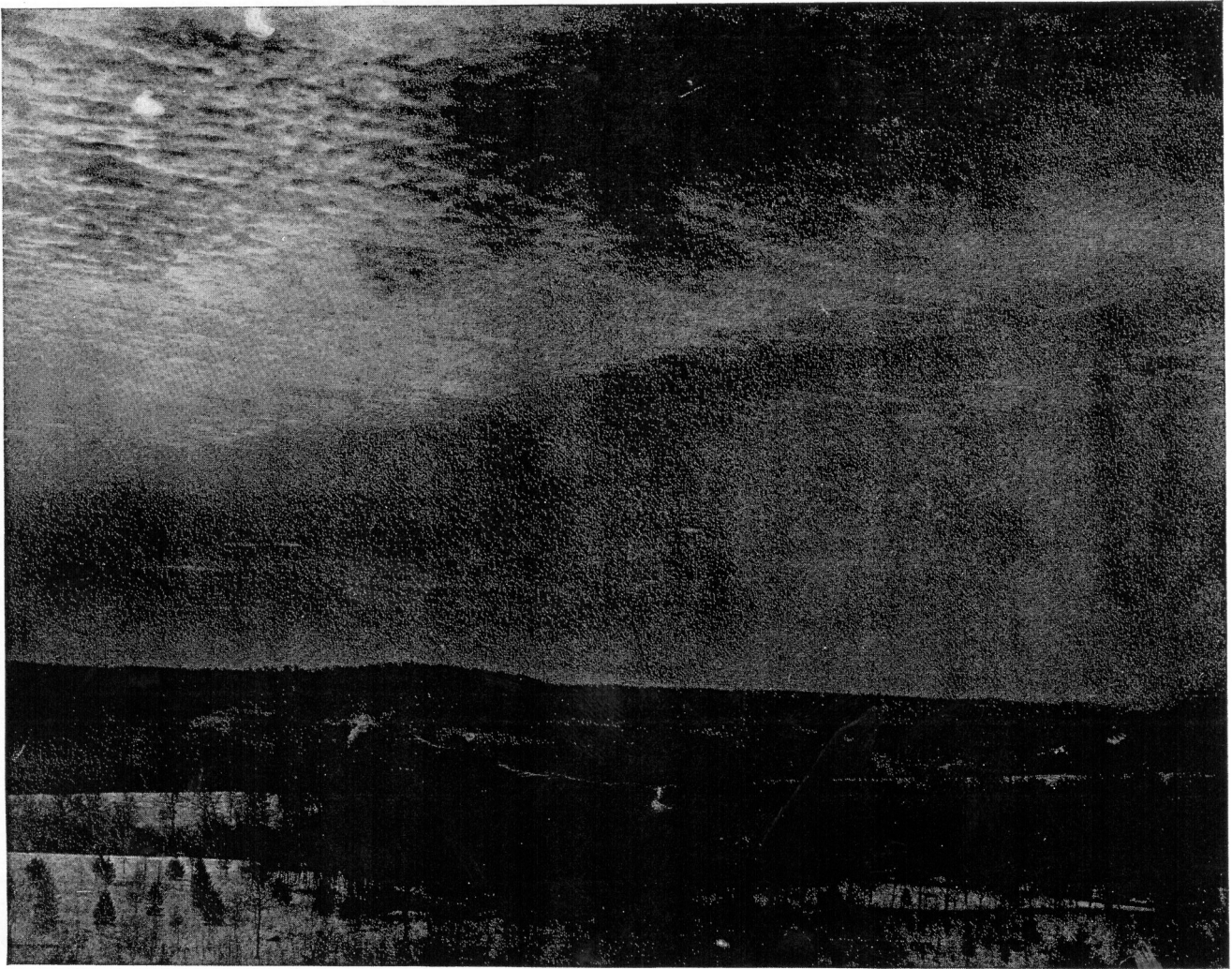
JOHN E GARABRANT

Manager Photographic Bureau

The work referred to in the above memorandum is shown on the following pages

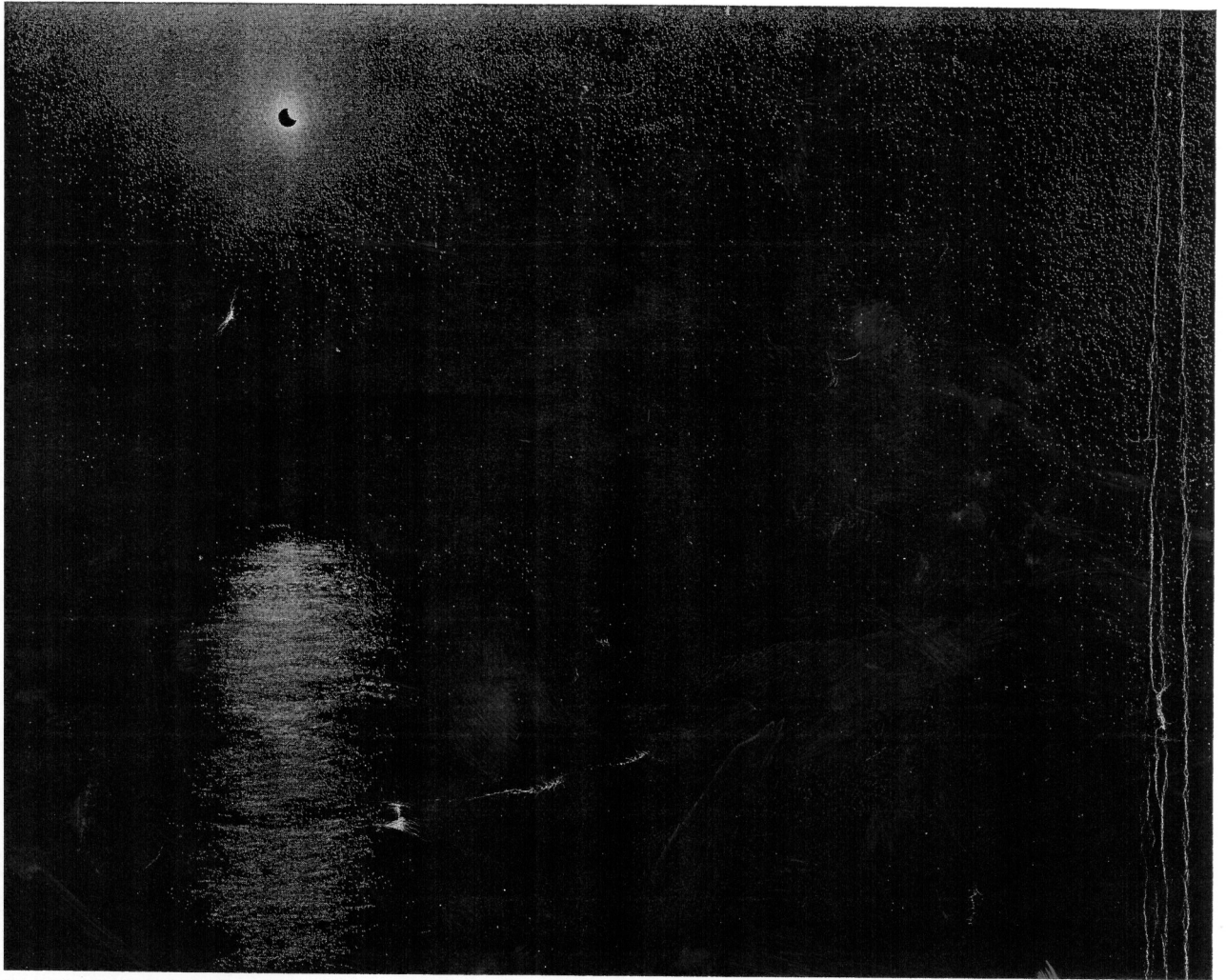


Picture of the Edison Company Photographers Made by Underwood and Underwood



Photograph by The New York Edison Company

This Scene Was Made from the Roof of Briarcliff Lodge and Shows the Vast Sea of Greenish Brown Clouds which Completely Covered the Field of the Sun. Our First Exposure Was Made at 8:15 and the Second at 8:25. The Sky Cleared Shortly after This and No Further Clouds Appeared during the Eclipse. The Exposure Was Made in $\frac{1}{25}$ th of a Second with a 20 Inch Lens F 8 Opening



Photograph by The New York Edison Company

This Photograph Was Made from the Jersey Side of the Bay, Opposite Lower New York. It Was Taken at 8:18, and Shows the Early Stage of the Eclipse



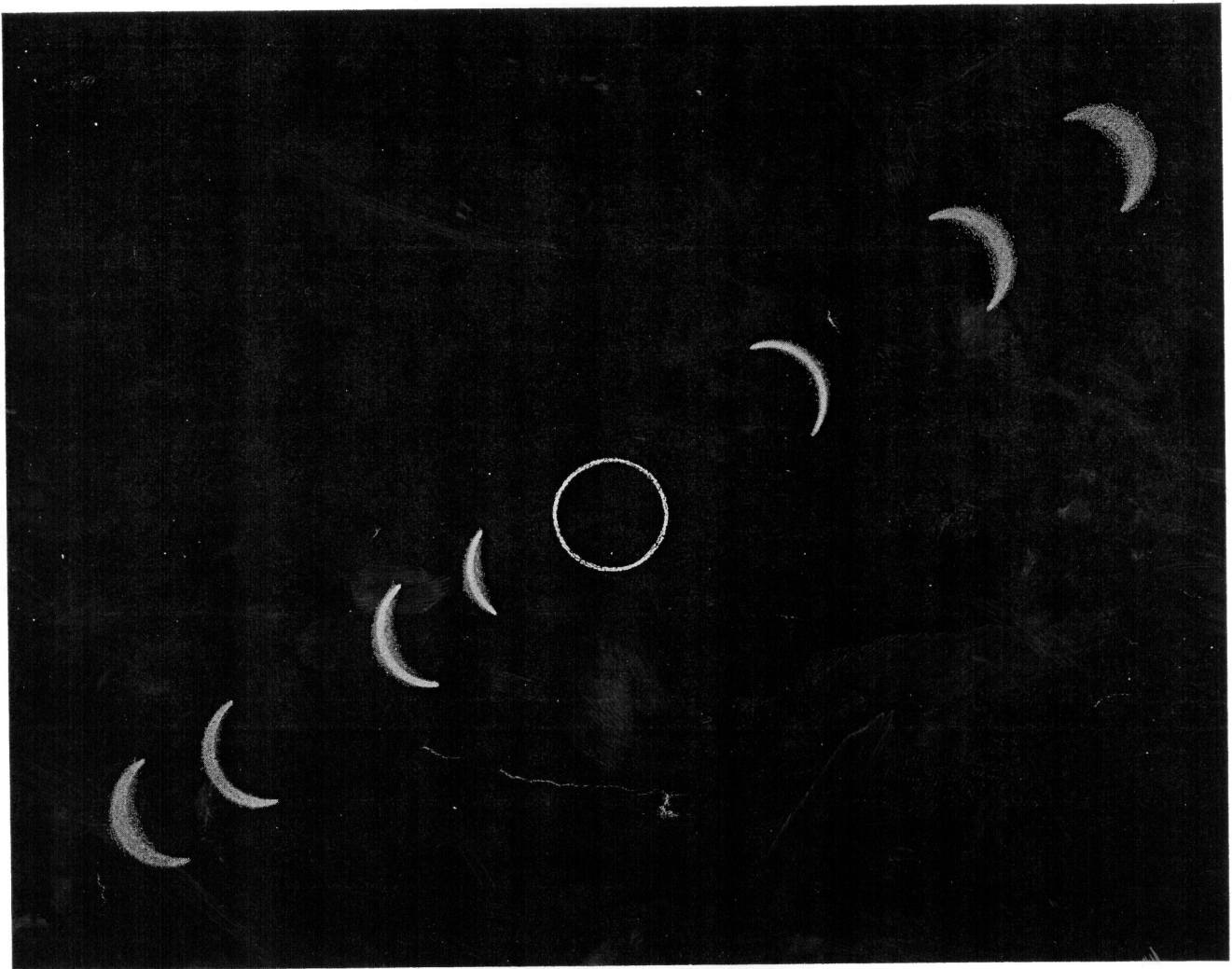
Photograph by The New York Edison Company

This Photograph Was Made from the Jersey Side of the Bay, Opposite New York. It Was Taken
at 9:05 shortly before Totality



graph by The New York Edison Company

Scene in Van Cortlandt Park during Totality. The Small Points of Light in the Lower Part of the Picture Indicate the City Lighting of That Section. This Picture Was Made with a 12 Inch Lens Using an F 8 Stop and 10 Seconds Exposure



Photograph by The New York Edison Company

This View Was Taken from the Roof of Briarcliff Lodge with a 28 Inch Lens at F 32 Stop. The Exposure Was Made at Intervals of 5 and 10 Minutes Starting at 8:40 and Ending at 9:40. The Exposure during Totality Was Made at the Last Cycle when the Corona Was of a Golden Yellow Which Accounts for the Absence of Any Great Band of Halation. This Picture Was Made with a 28 Inch Lens at F 16 Stop Using Color Filter



Photograph by The New York Edison Company

**SCIENTISTS MISSED
SUN'S 'DIAMOND RING'**

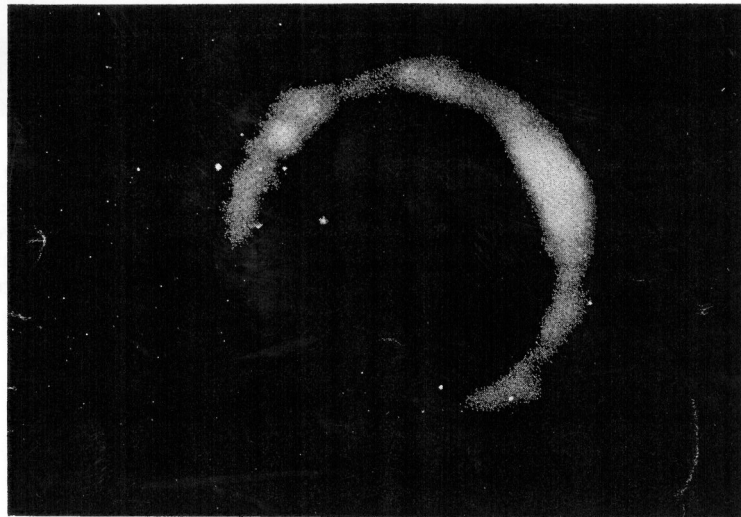
Beautiful Feature of Eclipse as
Seen Here Was an Optical
Illusion, Prof. Russell Says.

SHADOW BANDS EXPLAINED

Position of Sun on Saturday
Held to Prove That Air-Layers
Near the Earth Cause Them.

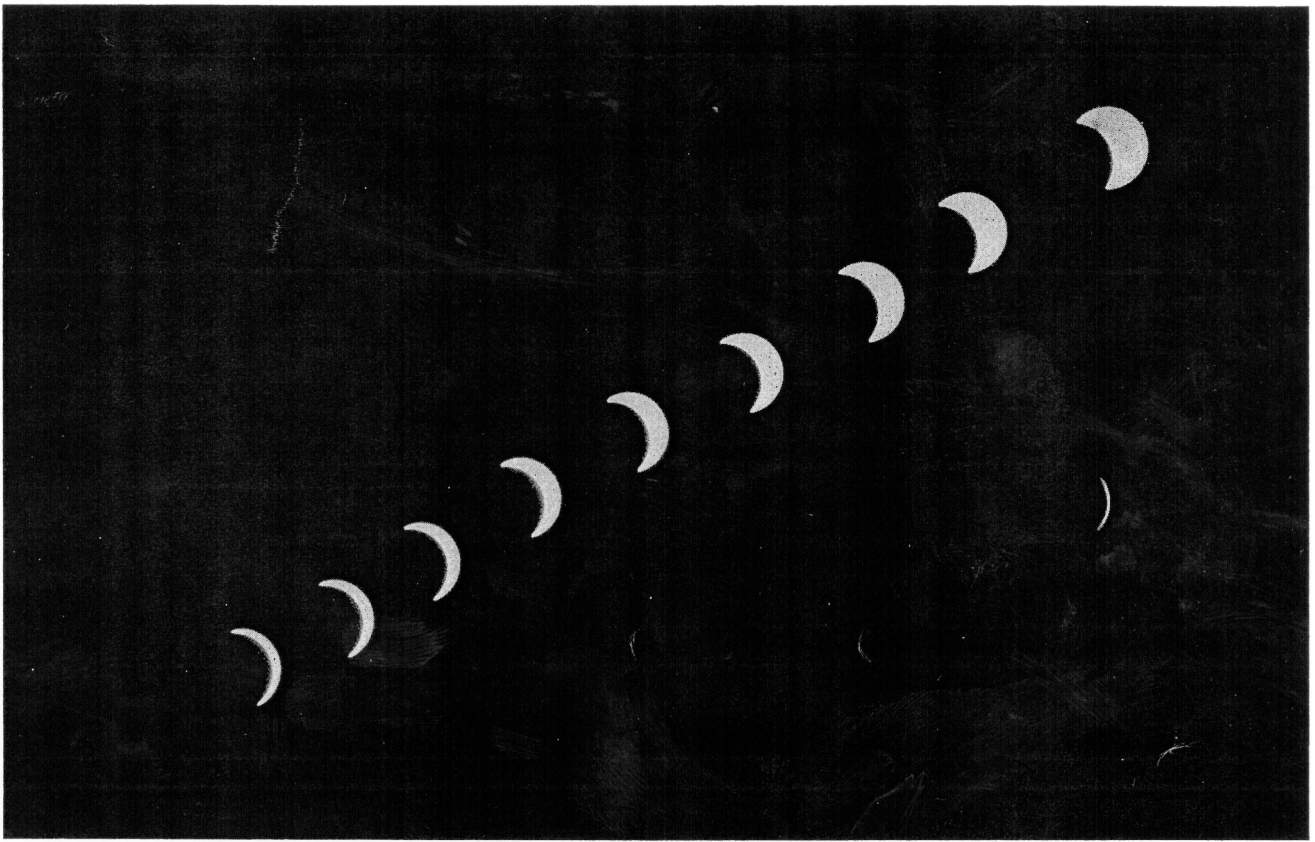
SEEN IN THE

This Picture Was Made at Van Cortlandt Park and We Were Fortunate in Obtaining the "Diamond Ring" Effect Referred to in the Clipping. This Was Considered One of the Most Beautiful Features of the Eclipse. This Was Made with a 12 Inch Lens and Enlarged Four Times



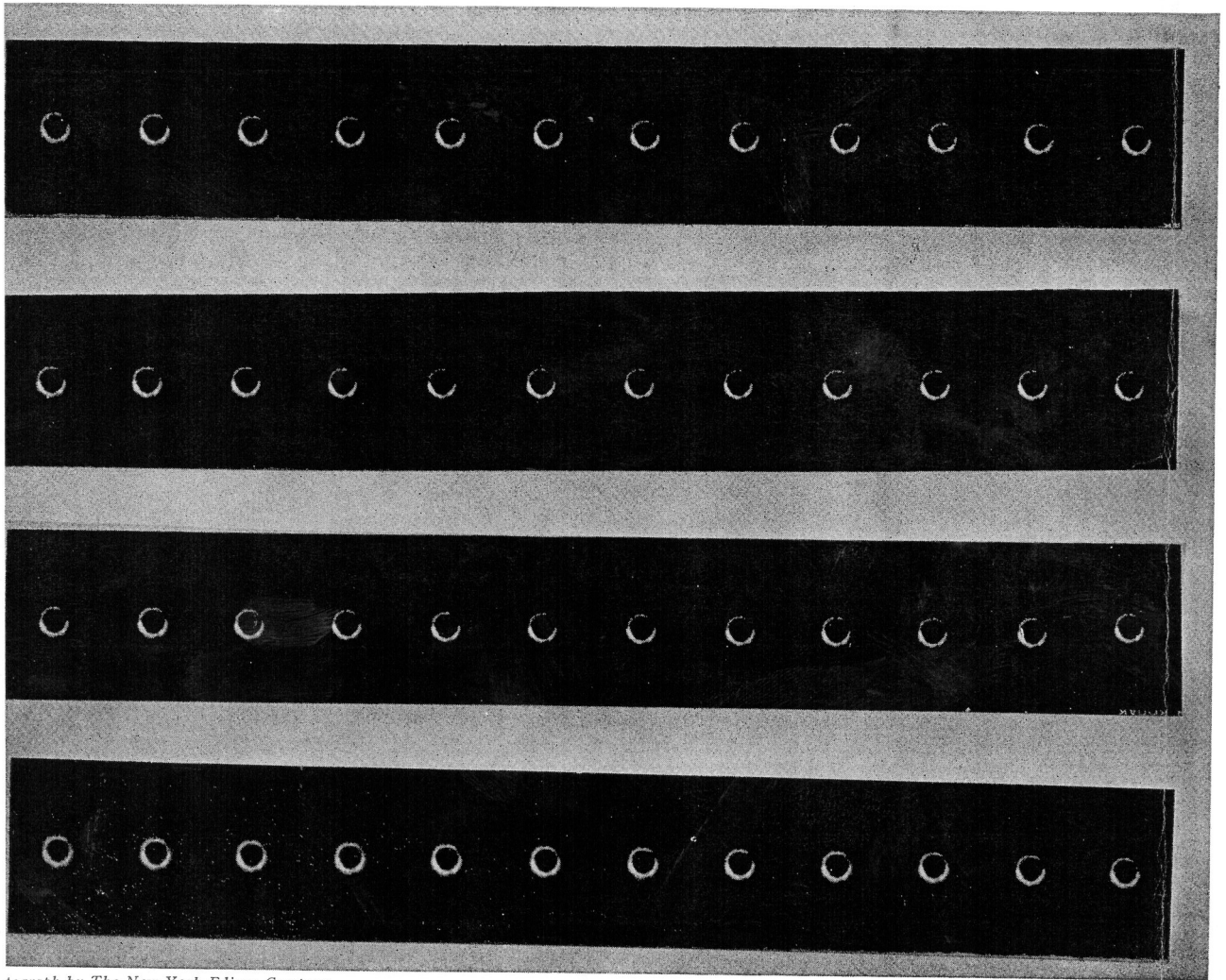
Photograph by The New York Edison Company

View of the Last Stages of Totality Showing the Corona. Taken from 148th Street and St Nicholas Avenue with a Movie Camera and Later Enlarged



Photograph by The New York Edison Company

Series of 5 Minute Exposures after the Totality Showing the Different Phases of the Sun from 9:20 to 10:40 As Seen from Van Cortlandt Park. Made with a 36 Inch Lens at F 32 Stop, 1/10th of a Second



ograph by The New York Edison Company

Series of Moving Pictures Made at 148th Street and St Nicholas Avenue; Also on the Roof of Briarcliff Lodge Showing the Eclipse at Totality. These Pictures Have Been Magnified about Twenty Times in Order to Give Detail for Reproduction

Thomas A Edison and the Solar Eclipse of 1878

(Contributed by J W L)

IN the year 1878, Mr Edison received an invitation through his friend Professor George F Barker, Professor of Physics at the University of Pennsylvania, to join a party of astronomers and physicists to observe the solar eclipse of that year at Rawlins, Wyoming territory. Edison's association with this party of distinguished scientists to observe the eclipse and the corona was for the purpose of testing his tasimeter, an instrument devised by him for measuring minute changes of temperature. His intimate association with Professor Barker, who became one of Edison's staunchest friends and admirers, a rare example among the academic physicists of the time, no doubt contributed much to excite his interest in electrical investigations, particularly in the field of electrical lighting.

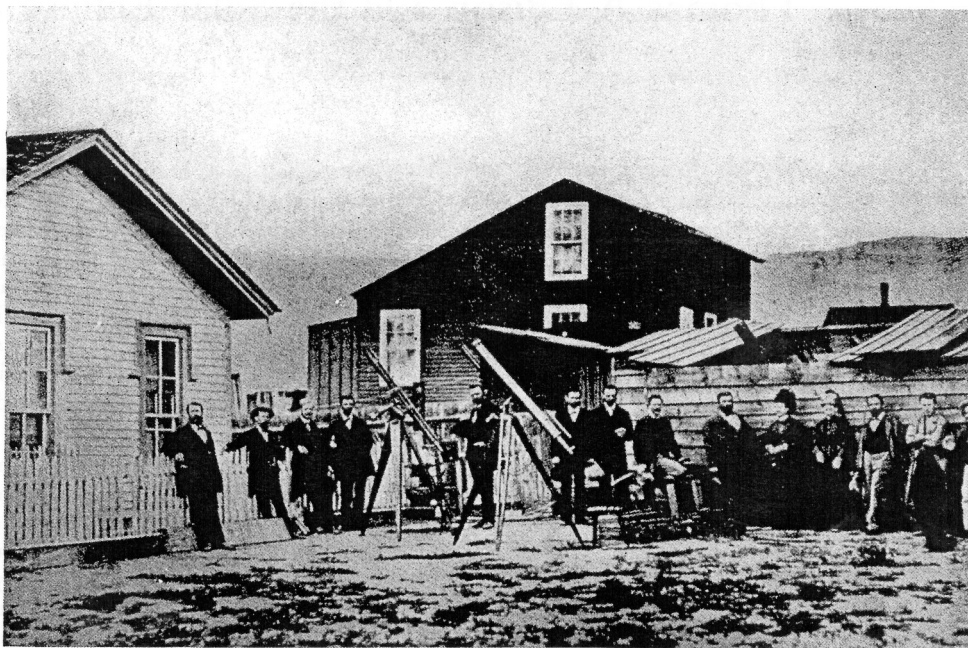
In a visit to Rawlins some thirty years later, Mr Edison made some notes on his astronomical adventure, which are related in detail as follows by his biographers Messrs Dyer and Martin

"There were astronomers from nearly every nation," says Mr Edison. "We had a special car. The country at that time was rather new; game was in great abundance, and could be seen all day long from the car window, especially antelope. We arrived at Rawlins about 4 P.M. It had a small machine shop, and was the point where locomotives were changed for the next section. The hotel was a very small one, and by doubling up we were barely accommodated. My room-mate was Fox, the correspondent of the New York Herald. After we retired and were asleep a thundering knock on the door awakened us. Upon opening the door a tall, handsome man with flowing hair dressed in western style entered the room. His eyes were bloodshot, and he was somewhat inebriated. He introduced himself as 'Texas Jack'—Joe Chromondo—and said he wanted to see Edison, as he had read about me in the newspapers. Both Fox and I were rather scared, and didn't know what was to be the result of the interview. The landlord requested him not to make so much noise, and was thrown out into the hall. Jack explained that he had just come in with a party which had been hunting, and that he felt fine. He explained, also, that he was the boss pistol-shot of the West; that it was he who taught the celebrated Doctor Carver how to shoot. Then suddenly pointing to a weather-vane on the freight depot, he pulled out a Colt revolver and fired through the window, hitting the vane. The shot awakened all the people, and they rushed in to see who was killed. It was only after I told him I was tired and would see him in the morning that he left. Both Fox and I were so nervous we didn't sleep any that night

"We were told in the morning that Jack was a pretty good fellow, and was not one of the 'bad men,' of whom they had a good supply. They had one in the jail, and Fox and I went over to see him. A few days before he had held up a Union Pacific train and robbed all the passengers. In the jail also was

a half-breed horse-thief. We interviewed the bad man through bars as big as railroad rails. He looked like a 'bad man.' The rim of his ear all around came to a sharp edge and was serrated. His eyes were nearly white, and appeared as if made of glass and set in wrong, like the life-size figures of Indians in the Smithsonian Institute. His face was also extremely irregular. He wouldn't answer a single question. I learned afterward that he got seven years in prison, while the horse-thief was hanged. As horses ran wild, and there was no protection, it meant death to steal one"

This was one interlude among others. "The first thing the astronomers did was to determine with precision their exact locality upon the earth. A number of observations were made, and Watson, of Michigan University, with two others, worked all night computing, until they agreed. They said they were not in error more than one hundred feet, and that the station was twelve miles out of the position given on the maps. It seemed to take an immense amount of mathematics. I preserved one of the sheets, which looked like the time-table of a Chinese railroad. The instruments of the various parties were then set up in different parts of the little town, and got ready for the eclipse which was to occur in three or four days. Two days before the event we all got together, and obtaining an engine and car, went twelve miles farther west to visit the United States Government astronomers at a place called Separation, the apex of the Great Divide, where the waters run east to the Mississippi and west to the Pacific. Fox and I took our Winchester rifles with an idea of doing a little shooting. After calling on the Government people we started to interview the telegraph operator at this most lonely and desolate spot. After talking over old acquaintance I asked him if there was any game around. He said, 'Plenty of jack-rabbits.' These jack-rabbits are a very peculiar species, they have ears about six inches long and very slender legs, about three times as long as those of an ordinary rabbit, and travel at a great speed by a series of jumps, each about thirty feet long, as near as I could judge. The local people called them 'narrow-gauge mules.' Asking the operator the best direction, he pointed west, and noticing a rabbit in a clear space in the sage bushes, I said, 'There is one now.' I advanced cautiously to within one hundred feet and shot. The rabbit paid no attention. I then advanced to within ten feet and shot again—the rabbit was still immovable. On looking around, the whole crowd at the station were watching—and then I knew the rabbit was stuffed! However, we did shoot a number of live ones until Fox ran out of cartridges. On returning to the station I passed away the time shooting at cans set on a pile of tins. Finally the operator said to Fox: 'I have a fine Springfield musket, suppose you try it!' So Fox took the musket and fired. It knocked him nearly over. It seems that the musket had been run over by a hand-car, which slightly bent the long barrel, but not sufficiently for an amateur like Fox to notice. After Fox had his shoulder treated with arnica at the Government hospital tent, we returned to Rawlins"



THE ASTRONOMICAL PARTY AT RAWLINS, WYOMING, IN JULY, 1878

The Distinguished Figure on the Extreme Left of the Picture is Professor George F Barker, the Third on the Left Dr Henry Morton—Later President of The Stevens Institute of Technology, Edison Himself Appears as the Youth Next to the Last on the Extreme Right

From the Life of Edison by Dyer and Martin

The eclipse was, however, the prime consideration, and Edison followed the example of his colleagues in making ready. The place which he secured for setting up his tasimeter was an enclosure hardly suitable for the purpose, and he describes the results as follows

“I had my apparatus in a small yard enclosed by a board fence six feet high; at one end there was a house for hens. I noticed that they all went to roost just before totality. At the same time a slight wind arose, and at the moment of totality the atmosphere was filled with thistle-down and other light articles. I noticed one feather, whose weight was at least one hundred and fifty milligrams, rise perpendicularly to the top of the fence, where it floated away on the wind. My apparatus

was entirely too sensitive, and I got no results.” It was found that the heat from the corona of the sun was ten times the index capacity of the instrument; but this result did not leave the value of the device in doubt. The Scientific American remarked

“Seeing that the tasimeter is affected by a wider range of etheric undulations than the eye can take cognizance of, and is withal far more acutely sensitive, the probabilities are that it will open up hitherto inaccessible regions of space, and possibly extend the range of aerial knowledge as far beyond the limit obtained by the telescope as that is beyond the narrow reach of unaided vision”

