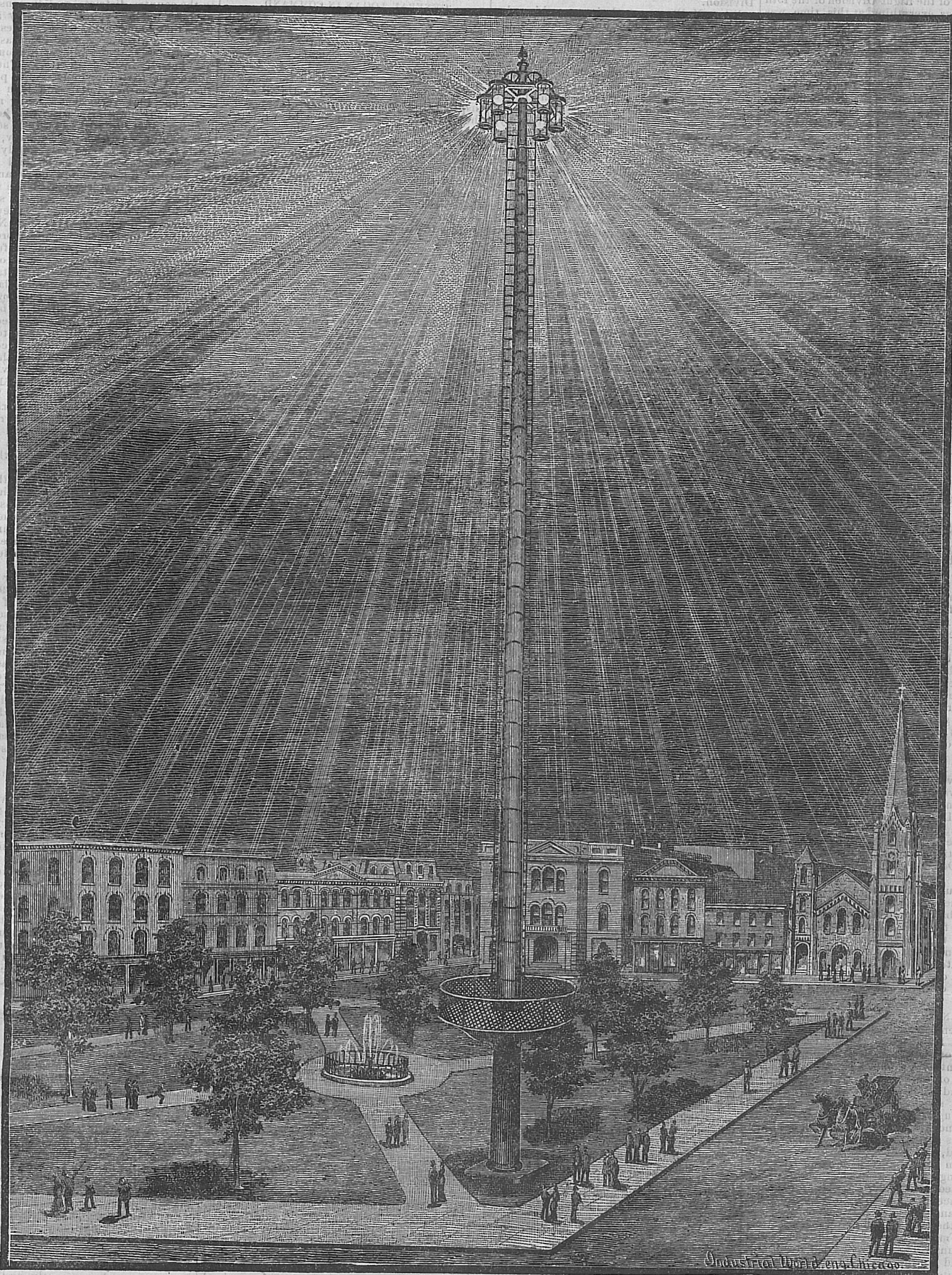


ARTIFICIAL MOONLIGHT.

The Brush Electric Light Mast.



THE MAST SOON TO BE ERECTED IN THE PUBLIC SQUARE BY THE BRUSH ELECTRIC LIGHT AND POWER COMPANY.

THE MAST SYSTEM

A New Application of the Electric Light.

Description of the Masts or Towers

By Which the First, Second and Third Wards are Soon to be Illuminated.

The above cut represents one of the five masts which the Brush Electric Light & Power Company have under contract, and in the course of a couple of months will have

method of putting them up that is both novel and interesting. It is briefly as follows: The first section of the mast is composed of boiler tubing eight inches in diameter and about 20 feet long, to this are riveted other pieces of tubing made of boiler iron which gradually increase in size toward the butt of the mast, until about 100 feet of the mast is complete. This is then set upon end by the ordinary means of putting up poles and spars. After this the mast is lifted bodily from the ground and shoved skyward like a telescope, by a powerful hydraulic jack. It is kept in a perpendicular position by means of strong guys, and section after section riveted on to the lower end until it is of the required height. It is in this manner that the masts in Akron and Middleton, O., have been successfully constructed in the face of many a doleful prophecy of failure.

After the mast is in position it is kept steady by six steel wire ropes made secure to posts or anchors in the ground. The mast itself is strong enough and set securely enough in a heavy bed of mortar in the ground to stand any length of time

have already perfected arrangements to try the system. Albany last week gave a contract to the Brush Company of that city to light the entire city with electricity by means of a combination of the mast and low lights such as are now in use in the Public Square.

By clippings from London *Engineering* and the *Electrician* of last month, it appears that the Anglo-American Brush Company have secured contracts to light large portions of Dublin and Edinburg by a combination of the mast and low light system.

Further proof of the demand for the light is the fact that the Brush Electric Company are again to increase the present great capacity of their new works, so that employment for fifteen hundred men will be given and products manufactured to the value of eight or ten million dollars annually.

From these evidences of the popularity of the electric light, and many other facts concerning its progress, the claim of its friends that it will become universally adopted for city lighting within the next five years is not too sanguine. Should Cleveland adopt the method the Brush Electric Light and Power Company are prepared

electricity as power, under absolute control, and with a minimum of trouble and expense. Such being the case, we may expect to witness an enormous development of the applications of electricity, assuming, of course, that the Faure battery is capable of indefinite reproduction on a practical scale. There are not wanting those who entirely dispute the value of the invention, and who ridicule the ideas set forth by Sir William Thomson. Professor Osborne Reynolds, of Owens College, Manchester, for instance, points out that, after all, one million foot pounds is a very small matter, being in fact just as much "energy" as is contained in one and one-half ounces of coal. Coal, indeed, is to be our standard, according to Mr. Reynolds, and he predicts the utter failure of the plan for storing electricity. Professor Ayrton also comes forward as a critic, albeit one of a milder type. He admits the truth of the statement that 1½ ounces of coal contains 1,000,000 foot pounds of energy, but he very pertinently asks how that force is to be extracted to its full extent. As a matter of fact it is impossible to obtain that result, no known engine being capable of working with so minute a quantity of fuel. This is exactly where the difference lies. The coal may contain the power, but it is all latent and not available without the aid of a much greater force than its own, whereas

ENGLISH NEWS

Their Treatment of the President

Commendable Enterprise of Some of Them. Lowell's Work in Contributing the News

NEW YORK, July 19.—Mr. Lowell's following interesting letter about the reception of the President in England.

LONDON, July 7.—The daily London papers respecting Washington have been very full. The *Daily News* and the *Standard* columns, on Monday, the other tenting themselves with less narratives. Never before has there shown so much interest in the event, or spent so much money accounts by cable. And there been for the most part very good. The dispatch to the *Daily News* was a very lucid and complete, six columns in length.

That supplied to the *Standard* has lately set up a bureau which was less remarkable for literature has been followed by others passages which might, with a been omitted. If the correspondent *Standard* is an Englishman, gretted that he should think ment to paint in such black of American political life. American, his act deserves without reserve. No censu strong for a man who takes f reviling his own country. Th lic is full of respectful syn cousins across the water. Th respondent encourages this picting what he calls a condit rottenness that is appalling, t thus:

"Civil service reform is a the presence of the hideous corruption which demoralizes here, and paralyzes it by the government. Politics ha level of a game of cards, in w play with a marked pack, and dishonor to cheat."

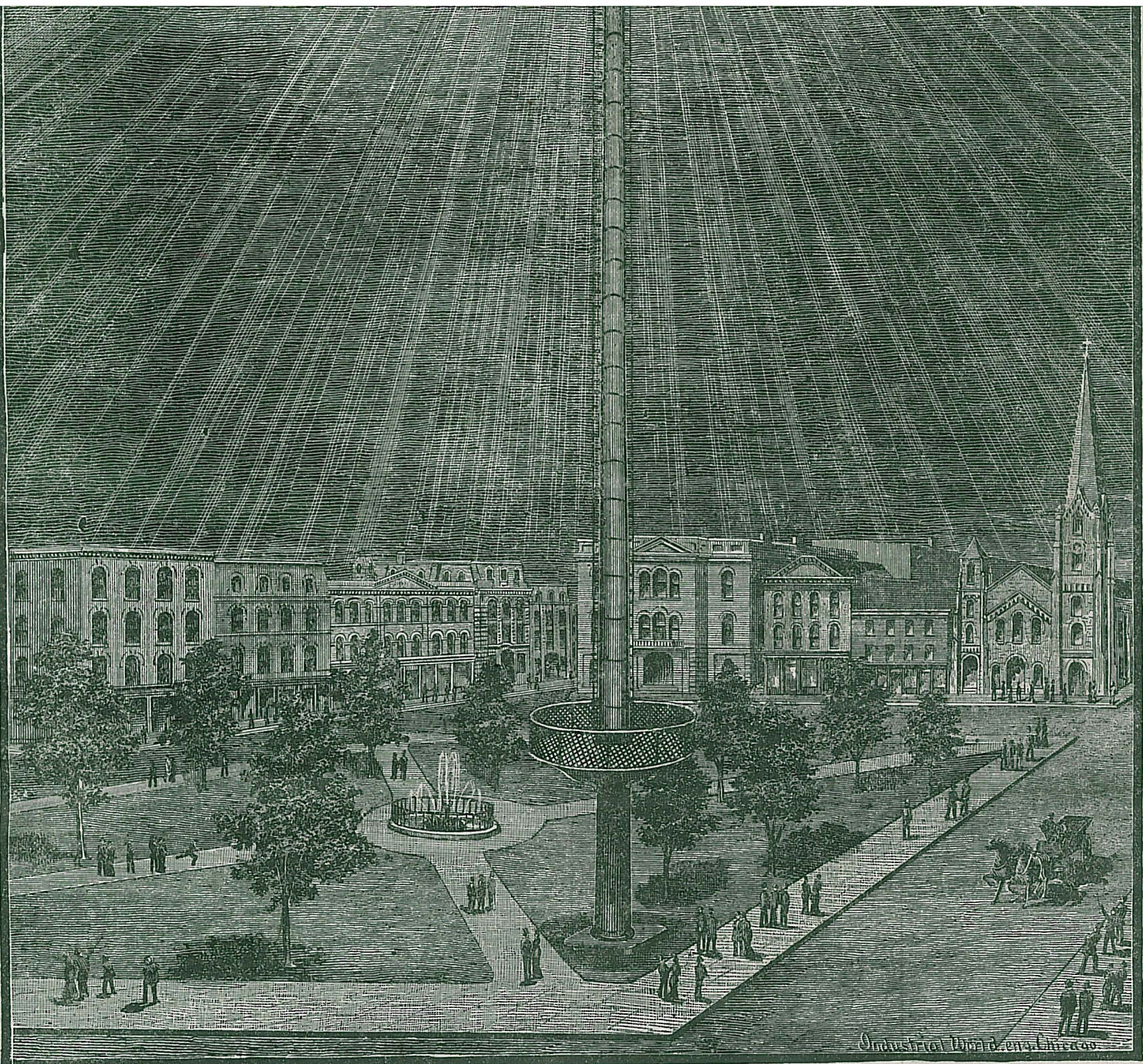
We shall owe the *Standard* for its enterprise if it is goir licity to wholesale libels up and government of the United things, of course, are copie people, I dare say, who thi They are read at a time when American affairs is keen beyv They are, however, wholl with the opinions which lie at general feeling in England, an expressed editorially in the prints this insulting and calu graph. Of course they do mis the mischief is lessened by th at the cruel outrage upon the l lies low under an assassin's b President is the chief of a part the Nation, and it is he wh this writer to a blackleg and I don't think we should endu sions of that sort very patientl

The dispatches to the *Tele* such dispatches, are of inter suspicion of partisan purposer tained in such a case, I shd were conceived in Mr. Conkl They do certainly appear to somebody who has close relat journal which has of late been l New York organ. I hope n may give offense to no one. It jecture. I have no notion wh these telegrams is—of these or other telegrams on which I c one. Whoever he may be, h Conkling drum very loudly ear of the small shopkeeper, w to be the most valued intege uency of this particular ousne

Perhaps I am wrong in att partiality to the supposed a supposed telegrams in the *Da*. He had a talent for silence on N the *Daily News* had six colun *Standard* its five columns and e two columns. The special dis *Daily Telegraph* and its shopkee ed in all to one-eighth of one.

Tuesday, however, it made up ous want of energy, publishing ture of President Garfield, as it before published one of the B derer, Lefroy, and a picture c House. It published also a c half of what purported to be d its correspondents in New Y of which bore close resembla of telegrams in its contempor before, only much watered and much so that the Conklingism to be the ear mark of genuiner accounts is quite choked and the Conklingism reappears her this morning we now learn that excitement arising out of chag by the administration press is su that there is a reaction in favor and Conkling, more especially ination of the assassin shows th thes have always been with opponents. He opposed Grant, in the Chicago Convention, and office from President Garfield as of Conkling. This again is high and novel intelligence. What s is that no story of the same sort the other London papers.

The *Telegraph's* corresponder that the published declarations c ling and of General Grant, both s utmost detestation of the crime warmest sympathy with the Presi produced a gratifying effect. H say who it is who has been grati Mr. Conkling's statement, or wh to be such, has been telegraphed has not been thought worth whi graph General Grant's. But Mr. has unhappily, been mutilated



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The above cut represents one of the five masts which the Brush Electric Light & Power Company have under contract, and in the course of a couple of months will have erected in the business portion of the city for the purpose of lighting it with electricity. These masts are to be constructed of iron and steel boiler plate, and will be from 200 to 250 or 300 feet in height, by thirty-six or forty-eight inches in diameter at the base. They will be located at a distance of from fifteen hundred to two thousand feet apart and surmounted with a carriage or battery of electric lamps, four or five in number and having a total illuminating power of from twenty to twenty-five thousand candles to each mast. It is expected that this will be sufficient to light the territory in the immediate neighborhood of the mast for a radius of half a mile in every direction, or a circle of one mile in diameter. As the masts will in no case be half a mile apart, there is every reason to believe that the circles of illumination will overlap so greatly that the rays of light will strike each other from every direction, intermixing and commingling to such an extent that an effect will be produced very similar to a strong moonlight.

The first of these masts is to be erected at the junction of the Viaduct and Superior street, and, although it is not yet positively decided, the second mast will probably be placed in the center of the Square, as represented in the cut. Mr. Isaac V. Holmes, a civil and mechanical engineer of high standing, both in this city and the East, has the contract for constructing the five masts, for which the iron is now ready. He has a

method of putting them up that is both novel and interesting. It is briefly as follows: The first section of the mast is composed of boiler tubing eight inches in diameter and about 20 feet long, to this are riveted other pieces of tubing made of boiler iron which gradually increase in size toward the butt of the mast, until about 100 feet of the mast is complete. This is then set upon end by the ordinary means of putting up poles and spars. After this the mast is lifted bodily from the ground and shoved skyward like a telescope, by a powerful hydraulic jack. It is kept in a perpendicular position by means of strong guys, and section after section riveted on to the lower end until it is of the required height. It is in this manner that the masts in Akron and Middleton, O., have been successfully constructed in the face of many a doleful prophesy of failure.

After the mast is in position it is kept steady by six steel wire ropes made secure to posts or anchors in the ground. The mast itself is strong enough and set securely enough in a heavy bed of mortar in the ground to stand any length of time and against the heaviest winds; but the guys are used to make assurance doubly sure and prevent wobbling while the lamp carriage, which runs up and down the sides of the mast on the iron guides, is being raised or lowered. The balcony around the base of the masts is used for the purpose of trimming the lamps by the attendants. The covering over the lamps at the top of the mast is a hood of copper which serves as a reflector end to keep off the weather.

Thus far the mast system of lighting is not in extensive use. Cleveland we believe will be the first large city to make a trial of it on a grand scale. Wabash, Indiana, was the first place that tried placing the electric light at a height. That was last fall. It was a decided success, and Akron tried one mast and a high flag staff from the top of Buchtel College and the lights were turned on last April. Since then the future of the tower system has been assured. A steady stream of delegations have visited Akron from all parts of the country to inspect the working of the light. So rapidly have people become convinced of the advantages of the system of elevated lights that today over half of the large cities in the country are moving to replace the gas posts with the electric masts. Tuesday Mr. G. W. Stockly, the manager of the Brush Company, returned from Akron with contracts for supplying that city with Brush electrical apparatus for four more masts, and we are informed that Cincinnati, Chicago, New York, Boston and Denver, Col.

have already perfected arrangements to try the system. Albany last week gave a contract to the Brush Company of that city to light the entire city with electricity by means of a combination of the mast and low lights such as are now in use in the Public Square.

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From these evidences of the popularity of the electric light, and many other facts concerning its progress, the claim of its friends that it will become universally adopted for city lighting within the next five years is not too sanguine. Should Cleveland adopt the method the Brush Electric Light and Power Company are prepared to make contracts for twenty or thirty more masts in the coming year, and, as it is claimed, will be able to light up the back yards, alleys and the present streets unlit by gas or oil at a cost less than the present price paid by the city for lighting.

THE STORAGE OF ELECTRICITY.

The storage of electricity, in the manner described by Sir William Thomson, whose letter we published, as regards its principal passages, last week, is of such transcendent importance that we need offer no excuse for again referring to the matter. Sir William Thomson, who is one of the highest living authorities, amply confirms the statement that a small box containing 1,000,000 foot pounds of electric force has been conveyed from Paris to Glasgow. This small box was in reality a Faure secondary battery, in which the electricity can be accumulated and stored until it is required for use. By the application of the same kind of battery, M. Faure has run a bicycle, and has also applied the principle to a small boat, which has been successfully tried near Paris. Sir William Thomson has tested this battery, and reports that it does really afford a means of storing electrical force—a fact which is of vital interest and importance to the public. As we have previously pointed out, the great defect of dynamically-created electricity has been its existence only so long as the motive power was kept running. When the engine stopped the current ceased. Under the new plan this is no longer the case, and, as the eminent scientist named points out, the electric energy may be stored for household or other purposes, just in the same manner as water or gas. In this way we may light our houses, or utilize the elec-

tricity as power, under absolute control, and with a minimum of trouble and expense. Such being the case, we may expect to witness an enormous development of the applications of electricity, assuming, of course, that the Faure battery is capable of indefinite reproduction on a practical scale. There are not wanting those who entirely dispute the value of the invention, and who ridicule the ideas set forth by Sir William Thomson, Professor Osborne Reynolds, of Owens College, Manchester, for instance, points out that, after all, one million foot pounds is a very small matter, being in fact just as much "energy" as is contained in one and one-half ounces of coal. Coal, indeed, is to be our standard, according to Mr. Reynolds, and he predicts the utter failure of the plan for storing electricity. Professor Ayrton also comes forward as a critic, albeit one of a milder type. He admits the truth of the statement that 1½ ounces of coal contains 1,000,000 foot pounds of energy, but he very pertinently asks how that force is to be extracted to its full extent. As a matter of fact it is impossible to obtain that result, no known engine being capable of working with so minute a quantity of fuel. This is exactly where the difference lies. The coal may contain the power, but it is all latent and not available without the aid of a much greater force than its own, whereas the electricity is all immediately available, and can be used wholly or partially at will. Besides this the coal once used is done with, whereas the Faure accumulator can be stored anew, and drawn upon as required. This is an essential distinction, and would seem to show that the criticism of Professor Reynolds is wholly beside the mark. Professor Ayrton intimates that himself and Mr. Berry are making attempts to convert at a low temperature the energy in coal into electric energy and Sir William Thomson admits that if carbon can be extracted in this manner the result would be analogous to what is done by the Faure accumulator. So far, however, M. Faure alone has achieved success, and it is to his apparatus, therefore, that we must look for the speedy practical solution of one of the great problems of the day.—*The Ironmonger.*

Effective Shot at Ingersoll.

Among the many effective small shots fired by Judge Black at Ingersoll is this, in reply to the latter's wails over the bloody sacrificial system of the ancient Hebrews: "The killing of those animals was," he said, "a terrible system," a "shedding of innocent blood," "shocking to a refined and sensitive soul." There is such a depth of tenderness in this feeling, and such a splendor of refinement, that I give up without a struggle to the superiority of the man who merely professes it. A carnivorous American, full of beef and mutton, who mourns with indignant sorrow because bulls and goats were killed in Judea three thousand years ago, has reached the climax of sentimental goodness; and should be permitted to dictate on all questions of peace and war. Let Grotius, Vattel and Puffendorf, as well as Moses and the prophets, hide their diminished heads.

...ing his own country. The Eng-
lic is full of respectful sympath-
cous across the water. The *Star*
respondent encourages this feel-
picting what he calls a condition of
rottenness that is appalling, and h-
thus:

"Civil service reform is a wild
the presence of the hideous nig-
corruption which demoralizes the
here, and paralyzes it by the
the government. Politics have st-
level of a game of cards, in which
play with a marked pack, and con-
dishonor to cheat."

We shall owe the *Standard* lit-
for its enterprise if it is going to
licity to wholesale libels upon t
and government of the United Stat
things, of course, are copied. I
people, I dare say, who think th
They are read at a time when the
American affairs is keen beyond p

They are, however, wholly in-
with the opinions which lie at the
general feeling in England, and th
expressed editorially in the par
prints this insulting and calumni-
graph. Of course they do mischi-
the mischief is lessened by the i
at the cruel outrage upon the Presi-
lies low under an assassin's bullet
President is the chief of a party as
the Nation, and it is he who is l
this writer to a blackleg and care
I don't think we should endure
sions of that sort very patiently.

The dispatches to the *Telegraph*
such dispatches, are of interest,
suspicion of partisan purpose con-
tained in such a case, I should
were conceived in Mr. Conkling's
They do certainly appear to pro-
somebody who has close relations
journal which has of late been Mr.
New York organ. I hope my
may give offense to no one. It is a
lecture. I have no notion who the
these telegrams is—of these or of
other telegrams on which I com-
one. Whoever he may be, he do
Conkling drum very loudly ind
ear of the small shopkeeper, who
to be the most valued integer in t
tency of this particular journal.

Perhaps I am wrong in attrib-
partiality to the supposed auth-
supposed telegrams in the *Daily*
He had a talent for silence on Mon
the *Daily News* had six columns
Standard its five columns and ever
two columns. The special dispat
Daily Telegraph and its shopkeep-
ed in all to one-eighth of one col
Tuesday, however, it made up for
our want of energy, publishing a l-
ture of President Garfield, as it had
before published one of the Brigh-
derer, Lefroy, and a picture of t
House. It published also a colu-
half of what purported to be dispa
its correspondents in New Yor
of which bore close resemblance
of telegrams in its contemporaries
before, only much watered and p
much so that the Conklingism w
to be the ear mark of genuineness
accounts is quite choked and sti
the Conklingism reappears here t
this morning we now learn that th
excitement arising out of charges
by the administration press is sub-
that there is a reaction in favor
and Conkling, more especially as
ination of the assassin shows that
thes have always been with t
opponents. He opposed Grant, it
in the Chicago Convention, and h
office from President Garfield as
of Conkling. This again is highl
and novel intelligence. What su
is that no story of the same sort
the other London papers.

The *Telegraph's* correspondent
that the published declarations of
ling and of General Grant, both sh-
utmost detestation of the crime,
warmest sympathy with the Presid
produced a gratifying effect. He
say who it is who has been gratifi
Mr. Conkling's statement, or what
to be such, has been telegraphed
has not been thought worth whil-
graph General Grant's. But Mr. C
has unhappily, been mutilated of
pressions of warm sympathy with
dent which produced so gratifying
on the *Telegraph's* corr-
in New York. In th
sence. Mr. Conkling's declara-
had here an effect the reverse of
All that was sent to us, or near
a panegyric by Mr. Conkling on M
We are, it is true, allowed to kn
Mr. Conkling's opinion no lang
overstate the enormity of the de-
teau. But we hear in the same b
there is no occasion for public app
or excitement. Why? Because
President, in case of death, inst-
ceeds, the government continuin
change had occurred.

And then follows a panegyric or
thur, coupled with a denunciation
who distrust him, as unsepeak-
and reasonable, and with an exp
Mr. Conkling's opinion that ass-
whether by pistol or newspapers
stamped out by the American pe
righteous and indignant accord.
ence to the assassination by new
crime which Mr. Conkling is pe
first jurist to define, is further elu-
the incidental observation that a
and atrocious falsehood has attem-
wilder the public sense.

The perusal of these striking
only adds to one's regret that
spondent (it is he of the *Times*), w
headquarters at Philadelphia, v
room for much of Mr. Conkling's
eloquence, should not have trans-
us any part of those expressions
sympathy with the President al-
tounded. The omission is more
because this Philadelphia corr-
shows himself to be what was call-
a Grant man, but what seems now
stalwart. If I venture to dwell on