### Improvements in New York Harbor During 1894.

During the past year an extensive series of improvements have been carried out in New York Harbor. Work has been in progress at nineteen different points. The work consisted in dredging out the shallow channels, in removing masses of rock or land which has stood in the way of vessels, wrecks have been removed, new sea walls and embankments have been built, measures have been taken to provide a more perfect defense, and a general modification and improvement of harbor lines is under way. Since New York has the most important harbor in the country, no trouble or expense has been spared in these improvements. During the year the government has expended about $1,000.000.

One of the most important improvements consists in dredging away and deepening the channel between Governor's Island and Brooklyn, which is known as Buttermilk Channel. The channel was made dangerous by the presence of three shoals which have long been a menace to navigation. These have been dredged away to a depth of 26 feet mean low water and with a width of 440 feet. Some 345-090 cubic yards of earth have been removed. Work has also been in progress on the channel between Staten Island and New Jersey. Previous to the improvements in this quarter the channel had a depth of but 9 feet, and this has been enlarged to a channel 400 feet wide and 13 feet deep. Work is so nearly complete as to permit vessels to pass through the channel, and the amount of commerce reported for the past year is 3,483,911 tons.

The channel of Gowanus Creek and Bay, near the southwestern part of the city of Brooklyn, has also been considerably widened and deepened. The original channel was only from 7 to 12 feet deep at mean low water, and a depth of 18 feet for a distance of one mile is to be provided. During the year 1894, $56,298 have been expended and some 342,270 cubic yards of earth have been removed at this point.

Extensive improvements have also been made in the Harlem River and Spuyten Duyvil Creek; originally there was no navigation between these two streams. The object of the improvements has been to provide a navigable channel between the East and Hudson Rivers. The original plans were estimated to cost $2,700,000. During 1894 a channel has been dredged in the Harlem River 9 feet deep mean low water and about 160 feet wide to within 200 feet of the east dam. In the Spuyten Duyvil Creek a channel of 9 feet deep, mean low water, and 150 feet wide has been dredged from the Hudson River to within 140 feet of the west dam. About $108,539 has been expended on the work during the year. Work has been also in progress to deepen and widen the channel of Sumpawanus Inlet. This channel is being dredged to provide a waterway 5 feet deep at mean low water with a width of from 100 to 150 feet, and for a distance of 4,500 feet. The commerce of this inlet for the past year has been 1,350 tons.

Important improvements have, furthermore, been made during the year in the main entrance to the harbor. The original depth in midchannel was 23·7. This was the least depth, and a great proportion of the commerce of New York could only cross the shoals at high water. The plan for improving this channel provides for dredging a channel 1,000 feet wide and 30 feet deep at mean low water. The estimated cost of the work was $1,490,000 for dredging 4,300.000 cubic yards of earth, and it was expected that the entire cost of improvement would be between $5,000,000 and $6,000,-000. So far about $2,000,000 have been expended. The amount expended during 1894 was $70,964, and some 348,963 cubic yards of material were removed.

### Treatment for Sprained Ankles.

In these days of bicycling, skating, tobogganning, and other out-of-door amusements incident to the seasons, accidents of various kinds are daily occurring, not usually serious, but often painful when seemingly slight.

From time to time one hears of different means of caring for sprained ankles, turned ankles, twisted wrists, etc., but the way now in vogue seems to give better results than any in the past.

It is generally within an hour after the accident that you are called in to see the case. The patient is suffering very severely, and wanting very much to know if "anything is broken." After examining for fractures, the Southern Medical Journal recommends the part to be bathed in extremely hot water, every hour or two, for a period of fifteen minutes at a time. Have the water just as hot as the patient can bear it, and apply with a sponge or cloth, rather than allow the ankle to lie in the water. Then dry and let the part rest quietly, wrapped in flannels, when an application of hamamelis, or veratrum and hamamelis, may be made.

Before retiring, apply a flannel bandage tightly around the swollen part, only being careful that the circulation is not shut off.

It is surprising how the hot applications relieve the pain and produce absorption, and how the bandage, by pressure, prevents swelling and inflammation.

## Correspondence.

### STORAGE BATTERIES CHARGED BY GRAVITY BATTERIES.

To the Editor of the SCIENTIFIC AMERICAN:

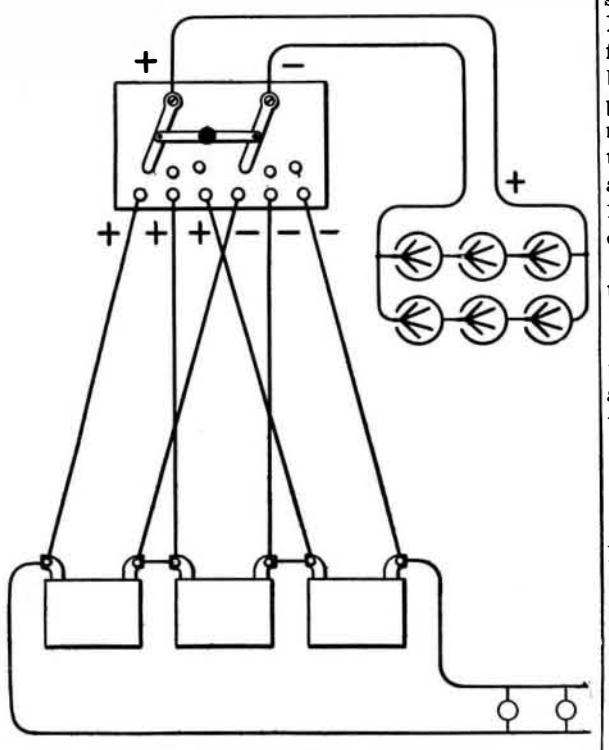
I see in your Notes and Queries that you have a good many inquiries about storage batteries being charged by gravity batteries. I inclose a copy of my plant that I am using. It has given the best of satisfaction up to the present time.

I offer it for publication, as it might help some person using a storage battery.

I have three storage batteries composed of five plates each (plates 6 by 8½ inches, perforated, and filled with red lead for the positive and litharge for the negative). I use six Crowfoot batteries for charging.

The Crowfoot batteries are connected three in series and two in multiple arc. The storage batteries are connected in series, and each battery is connected on a binding screw of a three-point pole-changing switch, with the Crowfoot battery. The switch is moved one point every twelve hours, so that each battery gets its supply of current. These batteries have been in use for a year and a half, and I have not had any trouble with them (excepting when the Crowfoot batteries had to be renewed).

I am at present using two lamps of two candle power, and the longest time that I have used them at




one time was three hours. By looking at the diagram above I think my explanation will be better understood.

E. C. DREWS.

The Dalles, Ore.

### Disastrous Effects of the Hot Winds.

To the Editor of the SCIENTIFIC AMERICAN:

It is quite generally known that a part of Texas, the Indian Territory, Western Kansas and Nebraska and part of Colorado suffers greatly from what is known as the "hot winds," a south or southwesterly wind that, owing to its high temperature and arid state, withers and, as the inhabitants of those regions say, "burns up" everything that grows above the ground. Its blasting effects are so terrible sometimes that every green thing, especially cultivated crops, is completely killed in a few hours, though the wind continues sometimes to blow for several days. Its destructive effects are not always however in proportion to the length of time it continues.

The suggestion I wish to make is this: A series or chain of lakes or very large reservoirs could be constructed in Texas or New Mexico, or further north in the Indian Territory and Colorado, which would reduce the temperature and at the same time render more humid the said destructive winds, and also increase the rainfall to the north, northeast, east and southeast from those lakes. Those advantages would not be the only ones that would result from such great reservoirs, but the country in the vicinity of the lakes, and as far therefrom as it would be practicable to make irrigating canals, could be greatly benefited by such a system. Besides the advantage that should be hoped for by way of rendering the "hot winds" harmless and increasing the rainfall, the district that should be irrigated would have its productive capacity doubled or trebled.

The rainfall over this vast plain over which the "hot winds" blow is not sufficient; in fact, the year is the exception when the rainfall is sufficient.

If such a plan as here suggested were put into practice, the benefit in the way of evaporation would not be dependent on the water surface alone, but from the irrigated land also. Hence the area thus contributing moisture to the arid winds would be large.

Is it not a matter that Congress should give some attention to? It seems that the officials who have the directing of internal improvements should see to it that a man be appointed to make the preliminary explorations and surveys, also estimates of the probable cost of dams and the general feasibility of such improvements, and the surface water supply, and also subterranean water supply.

If Congress were to make the necessary appropriation, the preliminary work as above outlined could be readily made.

There seems to be no law obstructing the way to such a course, for the government has a civil engineer in Colorado and two or three other States whose duties are principally confined to irrigating matters. It seems from this that no law stands in the way of such work being conducted in the States here named, as well as any other State.

BENJAMIN HILL.

Tiona, Pa., January 21, 1895.

### Protecting Telephone Wires from Danger Due to Contact with Trolley Wires.

In the SCIENTIFIC AMERICAN of January 5, under "Notes and Queries," L. A. F. asks: "How can the danger resulting from the falling of a private telephone wire onto a trolley wire be avoided?"

You answer by guard wires placed over the trolley wires. In our city there are no guard wires, and as a result the fire alarm, police signals, and telephone instruments are burned out during sleet and ice storms. My experience has been, on a grounded line to place a fusible cut-out in the line at each end of the circuit before the wire connects with the instrument. A simple cut-out may be made and cost but a dime by connecting a strip of tinfoil 4 inches long, ⅛ wide, having the ends held in place by a brass spring at each end, and under this place a piece of asbestos 8 inches by 1½, to prevent the wood from taking fire, if a cross occurs.

For short lines use metallic circuit. It is much safer than to ground the instrument.

A. C. B.

Meriden, Conn.

[The trolley wires should be provided with guard wires or something should be done to protect person and property from the danger incident to contact of telephone and telegraph circuits.—ED.]

### Telegraphy in Texas.

The Texas rule allowing senders of telegraph messages to recover for damages to their feelings from delay in transmitting the dispatches leads to an enormous amount of litigation against the telegraph companies. In some of the digests almost the whole section referring to actions against telegraph companies consists of references to the decisions of the Texas courts. Many of the messages relate to the sickness or death of relatives. In one of the latest cases it was shown that the message could not have been delivered in time to enable the woman to whom it was addressed to be present at the funeral of her father, whose sickness was reported in the telegram. She endeavored, nevertheless, to obtain damages, on the ground that if she had received the message promptly, she might have telegraphed asking that the funeral be postponed, and so might have been present at the services. The supreme court reversed the judgment for $500, obtained against the company. A verdict of $2,000, obtained by a father who had not received promptly a message concerning his sick son, one of $500 for delay in delivering a telegram announcing the funeral of a brother, and one of $1,000 for failure to deliver promptly a message telling of the sickness of a half sister were not set aside as excessive. In one case it was shown that there was no great affection between the person to whom the telegram was addressed and the sick relative, but the verdict was allowed to stand. In some cases the amount of mental anguish could not have been great, but the Texas juries, with great regularity and promptness, find verdicts against the telegraph companies when such cases are brought before them.

### A Loose Set Screw.

On Thursday, January 10, the fly wheel of the Atlas engine at the factory of Page Bros. & Co., 233 Cambridge Street, Boston, exploded with a terrific crash, smashing the wheel into hundreds of pieces and tearing up floors and partitions about it. One man was quite seriously injured by the flying masses of iron, and was taken to the hospital. The other employes were badly frightened and some narrow escapes are reported. The engineer was sitting in the boiler room near the engine when he noticed the speed was increasing. His first thought was the engine, but before he could get to the throttle the exhaust pipe had broken, and he immediately shut off the steam at the boiler, but before this could be done the wheel had exploded, the time from the first acceleration of speed to the final burst being scarcely a minute.

The engine was a balanced slide valve with shaft governor, and the bursted wheel was 8 feet in diameter, 15 inch face, and the rim averaged ½ inch in thickness. The shaft governor is of the type common to these engines. A loose set screw was the immediate cause of the disaster.