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II. ELECTRICITY, ETC.-Simple Holtz Electrical Machine. Cura-tive Application of Static Electricity. (Continued from No. 279.)

# Scientific American.

### COMET TELEGRAPHY.

In a special circular issued by the Science Observer the announcement is made of the receipt by cable of the elements and ephemeris of Swift's comet (a 1881), as computed by Drs. Copeland and Lohse at the Observatory of Dun Echt, of last year, which was not seen at all in Europe for nearly and ephemeris computed at each place should be cabled to the other; the Boston data to Dun Echt, and vice versa.

this astronomical code, both the original message and its translation are given. By the same code the announcement of a comet, which now requires a message of sixteen words, with a liability to error, can be condensed into seven words, five of which are necessary and two of which serve as check words to correct any possible error that might occur in the other five.

The elements and ephemeris computed at Dun Echt, on Monday, May 9, were transmitted by cable to Boston in the following message: "Decimosexto erective contextual bewitchery anticly demonstrative courageously sputter arithmancy stomachical auriferous suety bayou synecdochically bissextile eminently." The translation of this message is herewith given.

### ELEMENTS OF SWIFT'S COMET, 1881 (a).

Per. Passage. 1881, May 20.67, Greenwich Mean Time.

Long. Perihelion Long. Node $\omega = \pi - \Omega$ Inclination		· · · · · 124 5	$\begin{bmatrix} 2\\ 4\\ 8\\ 8\\ 8 \end{bmatrix}$ Eq. 1881.0.
Log. $q = 9.7674$ Motion direct.		q = 585	,
Greenwich, midnight		-Decl.	Brightness.
May 10, 14, 18,	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$^{+26}_{21}$ $^{46}_{35}_{15}$ $^{54}_{15}$	1.69
22,	40 48	9 55	<b>2</b> ·32

Computed by Dr. R. Copeland and J. G. Lohse, from observations made at Dun Echt Observatory. The light at discovery is taken as unity.

To astronomical people the translation will, of course, be of scientific value and interest; but a friend at our elbow says he is willing to wager a hatthatthe majority of readers will understand the telegraph message better and regard it and laying it on the desk said: "Mr. W., your indorsement with a deeper interest than the translation.

### .....

# OPENING OF THE ELECTRIC RAILWAY IN BERLIN.

It is announced by telegraph that the electric street railway of Dr. Siemens, in Berlin, was opened for public travel on the 12th of May, with much success. A number of prominent officials and scientists were present. We have heretofore given accounts of the progress of the construction of this work. It is a narrow gauge elevated street railway, mounted on posts, placed on the street sidewalks, something like portions of the elevated railway in New York, but on a smaller scale. The new railway is located on the outskirts of Berlin, and extends from the suburb known as Lichterfeld to Yeltow, a distance of about two miles. The horse engine. An average speed of twenty miles an hour accurately.

alongside the line, the current being conducted from the copper wire to the locomotive by means of contact rollers.

### IRIDIUM.

Several weeks ago we described the new process of John in Scotland. The experience with Swift's periodical comet Holland, of Cincinnati, by which he is enabled successfully to work this refractory metal, thereby effecting some very a month after its discovery, owing to the moonlight and a remarkable and promisingly useful results. A patent has total inability to determine its position after the moon had lately been granted for the invention. The process consists gone, was useful. It was an experience which involved the in bringing the iridium to a high heat, then adding phosloss of many observations before perihelion passage, and phorus, then casting the metal into the desired form, and caused the Boston Scientific Society to adapt a code to the then eliminating the phosphorus by heating the metal again telegraphic transmission of astronomical intelligence, and the in a chalk bath. In a recent lecture before the Ohio Mefirst test of this code has just been made. The Science Ob- chanics Institute. Cincinnati, Professor, Dudley enlarged server, published by the society, has for the past three years upon the value and importance of the discovery, reiterating issued special circulars by mail to American astronomers and the particulars given in the SCIENTIFIC AMERICAN of Febobservers, containing the elements and ephemeris of each new ruary 26, about the aid of the metal as an electrode in the comet, when the date could be obtained, and Lord Crawford electric lamp, its astonishing hardness, anti-corrosive has made a similar distribution of circulars by mail from his nature, etc. He stated that the metal has the appearance of observatory at Dun Echt to the English astronomers. It steel, but is much harder, being next in hardness to the was, therefore, agreed that, as a test of the code, the elements ruby. It does not rust and cannot be injured by acids. Professor Dudley stated that a bar of it had been used with gratifying success, in place of the negative carbon in the The elements from Boston were sent across a few days electric light. It burned for sixty hours without any loss in ago, and those computed at Dun Echthave just been received weight or any perceptible change in form. Iridium cannot at Boston, and form the subject of a special circular of the be fashioned by hammering while hot, nor can it be filed. Science Observer. As a proof of the adaptability and utility of It is moulded into convenient forms, and then sawed or ground by rapidly revolving copper disks, treated with emery and water. Many uses for the metal have been suggested. Besides its applicability to the electric lamp it has been found to be superior to platinum in telegraph instruments. Heretofore owing to the exceeding difficulty of working the metal its use has been much restricted, its most extensive employment, probably, being for pen points.

# Faithful John.

JOHN W. JACKSON, for more than thirty years a faithful employe in this office, died on the 6th of May, of consumption, and was buried from the Colored Methodist Episcopal Church in Sullivan street the following Sunday.

"Old John," as he was familiarly called, had grown up with the SCIENTIFIC AMERICAN, and was as well known among business men down town as the paper itself.

John was faithful to his trusts and exacting in others. If he had business to transact with a business house or an official department and he discovered in the clerk a disposition to give another attention to the exclusion of himself he would have no argument with the clerk as to his rights, but would seek out the head of the firm or department and lay before him his complaint, which, he used to say, prevented delay and facilitated business next time.

A number of years ago, before the present system of making collections through our banks was general, John had a great many collections to make throughout the city. One day, in the absence of the member of our firm who was accustomed to indorse the drafts and checks for collection, a draft was received at the office for a considerable amount on the Sub-Treasury in this city. Another of the firm, who is no longer a member, indorsed the draft and John was sent to collect the money. He soon returned with his bag of gold, was not known to the cashier, and he at first refused to pay the draft, but on my assuring him it was all right, he said if I would add my indorsement he would pay the money, so I did it, and it was my signature that obtained it."

It is doubtful if Mr. W. ever fully understood why the colored porter's indorsement was necessary. And so wherever John's errands called him, his word or his signature was recognized authority.

Old John is very much missed about this office, and he will be missed by scores of business men about town, so identified had he become with the SCIENTIFIC AMERICAN and its thirty-five years' growth.

# New Telephone Central Office System.

Mr. T. G. Ellsworth, manager of the John street office of passenger cars are narrow and short, carrying only 14 pas- the Metropolitan Telephone and Telegraph Company, of this sengers. There are two tracks. The cars are propelled by a city, has patented an improved telephone central office sysdynamo electric machine, which receives electricity through tem, the principal object of which is to facilitate connection the track and a suspended cable, from an electric generator, between wires of telephone lines in a telephone central office, one at each end of the line, each generator driven by a sixty and to afford means for making such connections rapidly and

By Gróf. M. HOPKINS. 11 figures. Working drawings of a 12-inch Holtz machine.—Double plate Holtz machine.—Curative applica- tion of static electricity.—Electrodes	ช   1
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was expected to be realized. We shall give further particulars in future numbers of our paper.

The original electric railways, which were tried as experifixed dynamo-electrical machine. The rails of the line and conduct the current of electricity and produce the necessary getfulness or neglect of orders.

motion. The second conductor conveying the current profound that this arrangement is exposed to serious interrup- instrument.

tions. The wet, snow, and mud which (according to the season) collects in the ordinary course of traffic upon the

middle rail interfere very seriously at times with its conductive capacity. It has accordingly been determined on the tion in Richmond, Va., the first week in May, opened with Berlin electric line to conduct the current by means of a every promise of a successful and profitable meeting. Five copper wire properly insulated, and attached to pillars erected 'hundred physicians were in attendance.

Ordinarily in telephone central offices mistakes and delays in connecting and disconnecting the wires of communicating parties are of frequent occurrence, for the reason, among ments at Berlin and Dusseldorf exhibitions in 1879 and 1880, others, that the operator at the telephone cannot conveniently, were worked by locomotives whose mechanism resembled a or does not himself, connect and disconnect the wires, but gives directions to others to do so; hence results much noise the wheels of the locomotive engines were made of use to and confusion, and consequent misunderstanding and for-

To avoid these difficulties Mr. Ellsworth has devised a duced by the stationary machine to the locomotive was con- system involving the use of novel switch connections and nected with a system of brushes attached to the locomotive. of novel telephone stands, and their peculiar arrangement These brushes touched a high-edged rail running in the mid- relative to each other, whereby each telephone operator is dle of two other rails and insulated from the ground by a enabled easily and without delay to connect and disconnect longitudinal sleeper. In practice, however, it has been several communicating wires that are connected with his

### American Medical Association.