

Astronomy and Geology.

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, in Scotland. The experience with Swift's periodical comet of last year, which was not seen at all in Europe for nearly a month after its discovery, owing to the moonlight and a total inability to determine its position after the moon had gone, was useful. It was an experience which involved the loss of many observations before perihelion passage, and caused the Boston Scientific Society to adapt a code to the telegraphic transmission of astronomical intelligence, and the first test of this code has just been made. The *Science Observer*, published by the society, has for the past three years issued special circulars by mail to American astronomers and observers, containing the elements and ephemeris of each new comet when the date could be obtained, and Lord Crawford has made a similar distribution of circulars by mail from his observatory at Dun Echt to the English astronomers. It was, therefore, agreed that as a test of the code, the elements and ephemeris computed at each place should be cabled to the other; the Boston data to Dun Echt, and *vice versa*.

The elements from Boston were sent across a few days ago, and those computed at Dun Echt have just been received at Boston, and form the subject of a special circular of the *Science Observer*. As a proof of the adaptability and utility of 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 h rewth given.

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

Per. Passage. 1881, May 20, 67, Greenwich Mean Time.

Long. Perihelion.....	300 2	} Eq. 1881.0.
Long. Node.....	124 54	
$w = n - O$	175 8	
Inclination.....	78 48	
Log. $q = 9.7674$	$q = 5854$.	
Motion direct.		

EPHEMERIS.

Greenwich, midnight.	A. R.	Decl.	Brightness.
	<i>h. m. s.</i>		
May 10,	0 38 32	+26 46	1.69
14,	56 48	21 35	
18,	1 17 32	15 54	
22,	40 48	9 55	2.32

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 hat that the majority of readers will understand the telegraph message better and regard it with a deeper interest than the translation.

PHENOMENON PRESENTED BY VORTEX-RINGS.

Our readers are all familiar with the peculiar appearance of vortex-rings, as they frequently result from the discharge of cannon or from the sudden discharge of steam through an open top locomotive stack. Professor A. E. Dolbear, of Tuft's college, Mass., has been making a careful study of the peculiar phenomenon, connected with these rings, and to facilitate his study has improvised a very simple apparatus for their production, which may easily be constructed by any person who may be interested in this curious study. We copy from *Science*:

1. If one vortex-ring strikes another vortex-ring upon the edge the two rings will bound away from each other as though they were solid elastic bodies, each one vibrating as it recedes.

2. If one vortex-ring overtakes another ring, both moving

in the same straight line, and both are of the same size, then the forward one will expand in diameter, and the latter will contract in diameter and will go through the forward one, when each will return to its original dimension. At the same time the forward one will have its velocity retarded while the other will have its velocity increased, and it may overtake the forward one and go through it.

3. If a vortex-ring passes near any light object, as, for instance, a silk thread suspended, or better still a small cloud of smoke or ammonium chloride dust, the latter will be seen to be apparently repelled from the front of it, but attracted and drawn into the ring from the rear.

4. If a vortex-ring be projected parallel with any surface, and at not too great a distance from the surface, the ring will move in a curved path towards it and strike it.

5. If two vortex-rings are projected so as to start in parallel lines near to each other, they will approach each other until they touch, when they may be either broken or else bound away from each other as in the first case above.

6. If two vortex-rings having the same rate of rotation be started in lines parallel to each other, and at not too great a distance apart, they will not only approach each other, but they will combine to form one ring, which continues to move in the same direction.

7. The combination is effected by the breaking of each at the point of contact, and the welding of the opposite parts of each ring to form one ring with twice the diameter. 8. These rings may in like manner be combined into one.

9. The structure of the vortex-ring is concentric, that is, a cross section of a ring generally shows a series of several concentric circles, with a hollow center. The middle of the ring appears to be a cylindrical unoccupied space.

As experimental work with such rings is very entertaining, as well as suggestive of the behavior of the real atoms of matter, it may be well to give the simple instructions necessary to perfect success.

Provide a cubical box with dimensions about a foot each way, having a swinging back frame, over which is stretched a piece of stout cotton cloth. On the opposite side, two or more inch-holes may be bored two inches apart. Pour some strong hydrochloric acid into one saucer, and some strong ammonia water into another. Set the two into the box, and shut down the door. The box will at once be filled with the white fumes, and a tap with the finger upon the cloth back, will send out well formed rings.

The phenomena one to five, can best be seen by employing only one of the holes, so as to form but a single ring. By striking the cloth a little harder the second time than the first, the second ring may be made to overtake the first, and if it is desirable to exhibit the rings to a room full of people, there should be but a single hole in front, and that one about three inches in diameter; the rings can then be projected with force enough to make them go 10 or 15 ft. from the box.

The other phenomena can best be studied by using only small holes, and tapping gently. The rings will come together within a few inches of the box. It seems to be essential that the two rings that combine, should have the same rate of rotation, a matter easily secured by forming the two at once in the above described way, but well nigh impossible, if one is formed after the other.

It is sufficient now to remark that the new phenomena described above, stimulate in a very striking way, what we call gravitation and chemism.

DISCOLOURED BRICK WALLS.

The white saline substance that "comes out" upon brick walls and which has been a source of annoyance to a great many, may, according to the *American Architect*, be remedied. In reply to a query on the subject, it says: The "saltpetring" of brickwork can generally be prevented by adding oil to the mortar, at the rate of a gallon to the cask of lime. If cement is used in the mortar, an additional gallon of oil must be allowed for each cask of cement. Linseed oil is generally employed, but any kind which does not contain salt will answer. The incrustation once formed, can be removed with hot water, or by the muriatic acid generally used for cleaning down brickwork, but it will reappear again by exudation from the interior of the wall, and usually leaves a permanent black or brown stain.

M. Philippart has written to M. Berger offering to place a large sum at his disposal for the best system of transmitting electric force to a distance shown at the forthcoming exhibition in Paris.