

A NOVEL MODE OF TELEGRAPHING BY SOLAR LIGHT.

A simple and we believe a new method of telegraphing by signals, has just been brought to our notice by Messrs. Abner Lane and Sherman Kelsey, of Killingworth, Conn. These gentlemen have recently instituted a series of experiments to ascertain the possibility of communicating intelligibly between remote points. Having become satisfied of the practicability of their scheme, they have filed a caveat in the United States Patent Office, and secured this discovery to themselves. The principle of this telegraph is that of reflected light. A common looking-glass of any suitable size (the power of course varying with the dimensions) is so held in the sunlight as to project a pencil of rays in the direction of the person to be communicated with. When the beam of light passes the eyes of the second party, it is readily distinguished, and the message is sent by intermitting the time between the flashes. Thus, if one movement of the mirror is made, that will denote A; two movements, B; and so on through the alphabet. In transmitting sentences or lengthened conversations, it is necessary, of course, to begin indiscriminately in the alphabet, commencing to spell a word. Thus, if the word Light is to be sent, the glass is moved for a b c d e f g h i j k l. Then a longer interval; then moved for a b c d e f g h i; when another interval occurs, and the glass is again moved for a b c d e f g—interval—then for a b c d e f g h—interval—then for a b c d e f g h i j k l m n o p q r s t—then cease. Operator No. 2 repeats as he sees the flashes, a b c d e f g h i j k l. He knows l is the first letter; then repeats a b c d e f g h i—i, then, is the next letter. Then a b c d e f g—then g is the next. Then a b c d e f g h—h the next. Then a b c d e f g h i j k l m n o p q r s t—t the next. He then has the word Light.

From the above it can be seen how any message can be sent, or how any conversation can be carried on. For operator No. 2 can have a mirror and send back messages or answers in the same way. An experimental trial of this system of telegraphy was made by the parties interested a short time ago. The scene of the experiment was between Falkland Island and the mainland, (Connecticut) a distance of 15 miles intervening between the operators. It was satisfactorily ascertained that simple sentences could be transmitted with the greatest ease, and the inventors conversed for an hour and a-half on topics concerning family matters. The principle can be applied in many ways. The flashes can be repeated an unequal number of times, and at different intervals, to represent certain letters and sounds. Also two or more flashes may be repeated, in quick succession with a single flash, at different intervals and in different orders, to represent letters or sounds. Instead of moving the mirror, it may be stationary, except to move as the sun moves, so as to throw light in the right direction. The rays may be also intercepted periodically by a screen or other device. The light may be continued for any length of time, either in a single flash or as long as desired.

An alphabet of the character of the "Morse alphabet" may also be used. Mr. Lane states that he has devised an alphabet by which messages can be conveyed, with the same facility and dispatch as by the electro-magnetic telegraph with the "Morse" alphabet. So also colored light may be used in connection with this system of telegraphy.

The means by which the ends are attained are simple, and require no apparatus beyond an ordinary mirror. For army and navy purposes we should think this mode of telegraphing is peculiarly adapted.

THE AMERICAN WATCH AS A TIME-KEEPER.

Some time during the early part of this year we visited Waltham, Mass.; in a subsequent number of the SCIENTIFIC AMERICAN we gave an account of the American Watch Factory at that place, and the operations therein carried on. We also expressed the opinion that for beauty of workmanship, exactness as time-keepers, and general reliability, the watches there made were not surpassed, or even equalled, by any imported. Wholly from a desire to see the American watch in the pockets of the American people, and Yankee time recorded by the product of Yankee skill, we reassert the opinions then ex-

pressed: they are fully sustained by our experience, and we are satisfied that no one need desire a more accurate or beautiful watch than those made at Waltham; all the encomiums we pronounced on the occasion referred to are fully warranted. There is an American watch in this office, of the very finest quality, which has not lost 90 seconds in 8 months; there may be some even better records than this; but although we pride ourselves on our punctuality, it is near enough for our purposes, and if we lose no more than one minute and a-half from our engagements in half a year, we are well content to set it down as profit and loss. These remarks are unsolicited from any source, but are only an act of simple justice to the American Watch Company.

HORACE H. DAY'S INDIA-RUBBER BREECH-PIECE.

REPORT MADE TO BUREAU OF ORDNANCE (NAVY DEPARTMENT) ON SEPTEMBER 23, 1863, BY LIEUTENANT-COMMANDER W. W. QUEEN, ON GUN-PRACTICE WITH DAY'S INDIA-RUBBER BREECH-PIECE.

Gun Practice at Experimental Battery, Dec. 20th, 1862.

Gun, 32-pdr., No. 354 (W. P. F.), on wood carriage in battery, with India-rubber Breech-piece. Projectiles, 32-pdr. shot. Charges of cannon powder, 1862. Fired from muzzle with slow match. Officer in charge, Lieutenant-Comdr. Moore. Record by Moore. Plane table, William P. Wright. Quadrant, N. Binnin. Elevation 20° 23' by quadrant. Aimed in line with middle screen pole. Wind N. N. W. Force, 6. Ebb tide, 6.6 to 7.5.

No. from Gun.	No. to-day.	Charges.	Weight of Projectile.	Insert'n.	Recoil.	Time Fired.	Clearance of Trunnions above water.	REMARKS.
1	2	9	32.75	64	10.3	12.27	101.4	In line with left hand pole. Right to left.
2	3	9	32.75	64	10.3	12.27	101.4	In line with middle pole. Right to left.
3	4	9	32.75	64	10.3	12.27	101.4	In line with right of middle pole. Right to right.
4	5	9	32.75	64	10.3	12.27	101.4	Aimed at our right hand pole.
5	6	9	32.75	64	10.3	12.27	101.4	In line with middle pole. Right to left.
6	7	9	32.75	64	10.3	12.27	101.4	In line with right of middle pole. Right to right.
7	8	9	32.75	64	10.3	12.27	101.4	Slightly to the left of extreme left pole. Right in line.
8	9	9	32.75	64	10.3	12.27	101.4	In line with left hand pole. Right to left.
9	10	9	32.75	64	10.3	12.27	101.4	Line shot. Right to right.
10		9	32.75	64	10.3	12.27	101.4	Slightly to left of 2d hand pole. Right to left.
		9	32.75	64	10.3	12.27	101.4	Slightly to right of middle pole. Right to right.
		9	32.75	64	10.3	12.27	101.4	Line shot. Right in line.

Had to draw the 8th charge and put in a new match, the shot having laid on the 1st match, putting it out. A primer was used previous to withdrawing the charge, which had no effect except to make a hole in the rubber.

Several times the rubber breech-piece was forced out of the chamber by the concussion.

The record shows that not much accuracy was obtained, although the gun was well sighted.

No tackles or breechings used.

With India-Rubber Breech-Piece, December 20th, 1862. Fired for comparison with India-Rubber Breech-Piece, Dec. 20th, 1862.

32-pdr., No. 354, (W. P. F.) Shot, 32.50 lbs. 9 lbs. cannon powder, 1862. Elevation, 20° 33'.

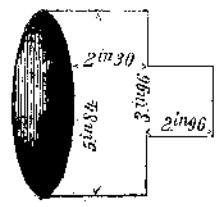
No.	Range.	Diff.	No.	Range.	Diff.
7	1186		18	1118	
8	1140	46	16	1180	62
1	1186	45	14	1226	46
4	1194	30	11	1279	53
3	1224	3	12	1296	17
6	1227	3	13	1299	3
5	1234	7	19	1318	19
2	1243	9	15	1355	87
9	1256	13	17	1379	24
10	1334	78	20	1408	29
	1217.3	198		1285.8	290

Respectfully submitted, (Signed) W. W. QUEEN, Lieut.-Comdr. U. S. N. Correct copy. W. MITCHELL, Lieut.-Comdr. and Executive Officer. September 23, 1863.

Gun Practice at Eastern Branch Battery, January 15th, 1863.
Gun, 180-pdr., No. 1 (F. P. F.), mounted on pivot carriage, in barricade, with India-rubber Breech-piece. Charges, 40 lbs. cannon powder 1862. Projectiles, solid shot. Fired from muzzle with quick match. Officer in charge, Lieut.-Comdr. J. G. Mitchell. Record by Cook. Aimed at bank of earth at eighty-five feet.

No. from Gun.	No. to-day.	Charges.	Weight of Projectile.	Insert'n.	Recoil.	Time Fired.	Clearance of Trunnions above water.	REMARKS.
29	30	40	126	64	16	16	16	Rubber breech-piece was blown out and struck the bank.
30	31	40	126	64	16	16	16	Rubber breech-piece started forward 30 1/2 inches.
31	32	40	126	64	16	16	16	While approaching the gun out of small breach of earth.
32	32	40	126	64	16	16	16	On reaching the breech found it badly torn.
		40	126	64	16	16	16	The rubber breech-piece was blown out, and fell 50 feet to the front of muzzle of gun.
								Finding it so badly damaged, the trial was discontinued.

The rubber breech-piece was 8 inches in length and 2 of an inch smaller in diameter than the bore of the gun, with its rear shaped to fit the bottom of the bore. The rear of the breech-piece was hollowed out, as per sketch.



The rubber was vulcanized to 280° Fah. Weight of breech-piece, 22 lbs. Respectfully submitted, (Signed) JOHN J. MITCHELL, Lieut.-Comdr. U. S. N. Correct copy. W. MITCHELL, Lieut.-Comdr. and Executive Officer. September 23, 1863.

Practice at Iron-Plated Target, No. 35, Experimental Battery, March 2, 1863.

Gun, 130 pdr., No. 2. On pivot carriage at east end of battery. Charges, cannon powder. Projectiles, solid shot, Cloverdale cast-iron. Primers, quick match from muzzle. Officer in charge, Lieut.-Comdr. Wm. Mitchell. Record by Moore.

No. from Gun.	No. to-day.	Charges.	Weight of Projectile.	Insert'n.	Recoil.	Time Fired.	Clearance of Trunnions above water.	REMARKS.
1	43	130.60	73%	8.4	12.20	101.4		

Mr. Day's India-Rubber Breech-piece was used. The following are the measurements and weight: Length, 10 inches; diameter, 9.95 inches; weight, 34 lbs. 25.

The Rubber Breech-piece was thrown forward from its seat 2 1/2 inches, and the action of the gas escaping through the vent drew the surface of the rear of breech piece toward the vent, making a ragged mass of rubber at that point, and stopping up the vent. Respectfully submitted, (Signed) W. MITCHELL, Lieut.-Comdr. U. S. N. Correct. W. MITCHELL, Lieut.-Comdr. and Executive Officer. September 23, 1863.