ELECTRICAL SPORTING BULLETINS.

A simple method for the automatic bulletining of electrically transmitted intelligence is a problem long sought for by inventors. Instruments have been proposed, and efforts made to apply them commercially, which, in practice, have been found too complicated for practical purposes, too expensive for general

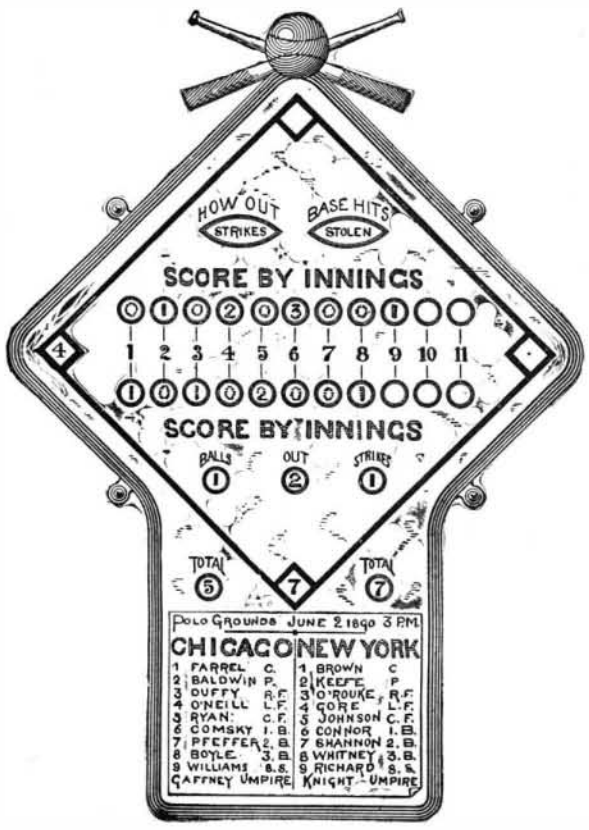


Fig. 1.—ELECTRICAL BASE BALL BULLETIN.

adoption, or, from their fine adjustments and other deficiencies, liable to derange them and error in working. The ideal bulletin or indicator system must be reduced to the simplest electrical and mechanical organization. The electrical formula, so to speak, must be reduced to the lowest terms, approaching, as far as possible, the Morse telegraph. It should be free from complications and delicate adjustments, capable of being relayed and repeated over any length of line within a single circuit. We illustrate a system having these qualities to a marked degree. It is the invention of Mr. S. D. Mott, of Passaic, N. J., who has reduced it to practice in an interesting and popular way by the construction of instruments for the indication of races and national games.

The annexed illustrations show a double bulletin for the popular game of base ball, together with a diagrammatic view of its electrical parts. On the instrument, or in proximity thereto, is a programme of the day's game; the contestants—in this case Chicago and New York—are printed in columns, say red and blue, here indicated in hatched lines, with corresponding colors indicated upon the dial and through the openings in the dial face.

All the details of the game from beginning to end may be indicated, and every feature of play marked upon the board, so that the progress of the game can be watched by any one miles away from the base ball grounds. The plays in base ball follow one another so rapidly that the movable parts of the diagram will be constantly changing, and the interest will be maintained throughout the entire course of the game.

Upon examination, it will be observed that the following points or main features of the game of base ball are as clearly indicated as the clock indicates the time of day: The contestants, time, place, and date of the game, umpire, battery, position of men on field, the inning being played, the side which has the inning, the number of outs in the inning, the man at the bat, the number of strikes called on him, also number of balls called. It shows how the last man went out, whether by fly, fowl, assist, strike, or sacrifice hit, the base run, home run, base on balls, stolen base, or base on error; the table score or the score by innings. A bell taps when any of these changes take place upon the face of the instrument.

The face of the bulletin, as illustrated, shows a game being played at the Polo Grounds, New York, June 2, 1890, at 3 p. m., between Chicago and New York, to stand 7 to 5 in favor of New York. The first half of the 9th inning is being played by Chicago. Ryan and Comisky are out; the latter went out on strikes. Second baseman Pfeffer is to the bat, one strike has been called and one ball; O'Neill is on third base, which he has stolen. The numbers or letters showing through the openings in face of dial are printed on the Bristol board disks held by aluminum spiders fast on shafts bearing a specially devised ratchet, which is actuated by a local electro-magnet energized by a local battery. The disks are shown at a a', Fig. 2, and the actuating battery at B, in the same figure. The transmitting battery, B, gives the impulse by sending reversed through the medium of the transmitting keys, k k', the local battery, B', doing the work in each instrument, or it may actuate several instruments. The transmitter consists of reversing keys, battery, and operator's guide. The receiver consists of the instrument, A, which controls two separate circuits; one circuit actuates the selector, which selects the local magnet, and the other circuit from the same local battery operates the selected local magnet. The key, k', sends the current over the line, and k through the ground. The latter circuit includes the magnet, m, which actuates the operator's guide, which indicates to him the magnet selected in the instruments under his control.

Fig. 2 shows the contact arms of the selector in circuit with a synchronizing magnet, which, together with all corresponding magnets through the system, is released and progresses one step by a single positive impulse sent over the line.

The diagram is deemed sufficiently clear to need no detailed description.

The problem, simply stated, is to enable the operator to select any one magnet out of any reasonable number by a positive or negative impulse sent over the line, and when so selected to cause that magnet to operate by a single reversal.

An important feature of this invention is the novel form of relay or repeater, Fig. 3, devised by Mr. Mott, for this class of work. The method of synchronizing the instruments one with another, as well as the local magnets throughout the system, brings them, at will of the operator, back to the zero or neutral point. The instrument shown in Fig. 3 will operate two separate and independent locals or repeating or relay reversals of polarity.

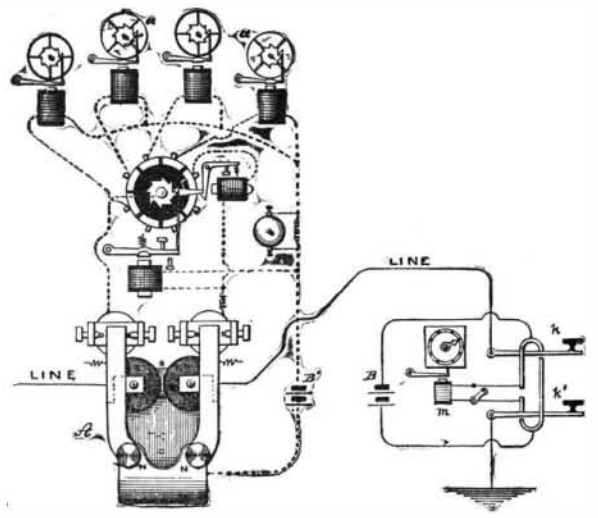


Fig. 2.—DIAGRAM OF MECHANISM AND ELECTRICAL CONNECTIONS OF THE BASE BALL BULLETIN.

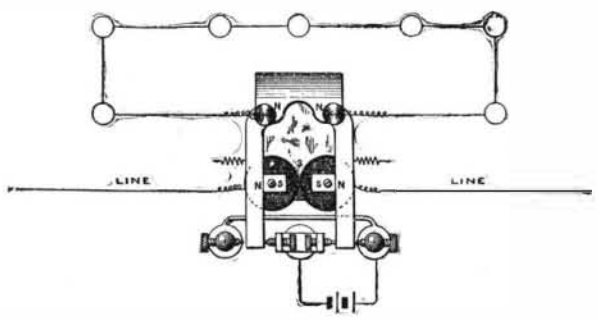
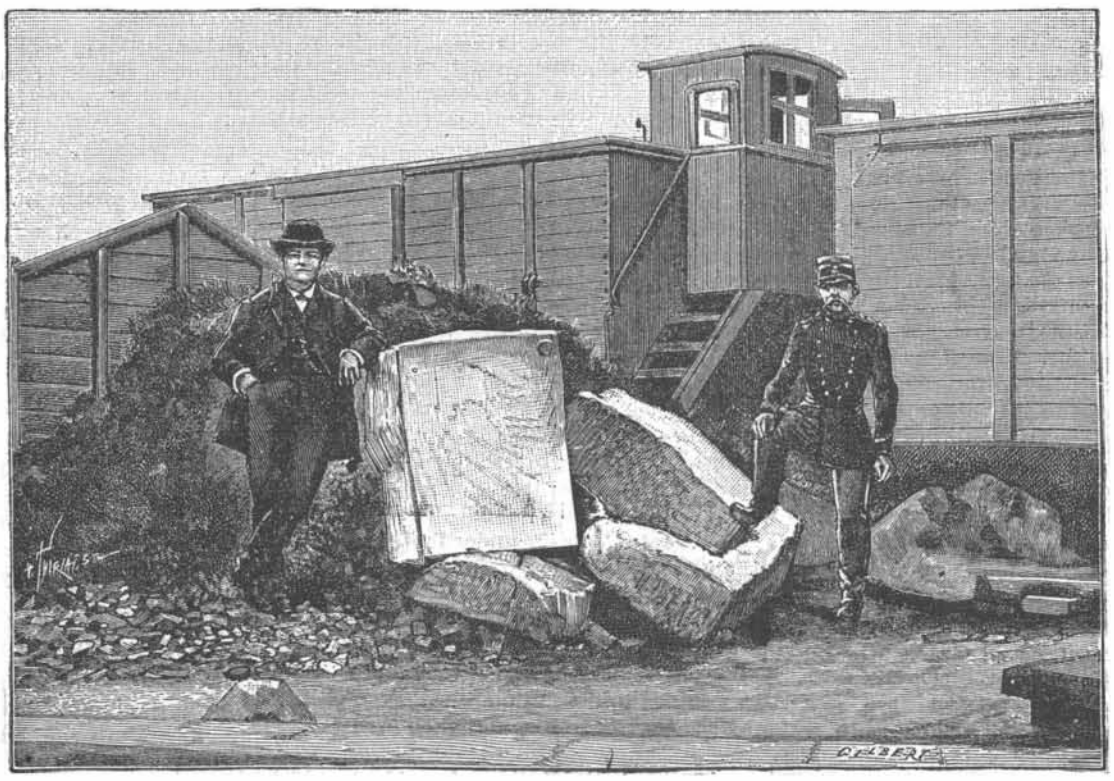


Fig. 3.—PLAN VIEW OF DOUBLE RELAY.

THE SCIENCE OF SMUGGLING.

With what skill adulterators sometimes utilize the resources of chemistry or physics in order to imitate natural substances or to sophisticate manufactured products is well known. The genius of smugglers knows no less limit. We have recently been apprised of a fact which appears to us to cap the climax. We regret it for the sake of our neighbors across the Rhine, but it is a question of a German fraud.

The following is the fact as communicated to us by Mr. E. Demenge, engineer at Longwy, along with a photograph taken upon the spot as a proof.



A DRESSED STONE SEIZED AND BROKEN AT THE LONGWY CUSTOM HOUSE AND FOUND TO CONTAIN A CAN OF ALCOHOL.

On the 27th of last September the Longwy custom house seized a German car that had started from the Luxemburg station, carrying so-called dressed stone. From one of the blocks there was oozing a liquid that was recognized by the inspector as 96 degree alcohol. The car was put on the wharf and the stone was taken off and broken, when it was observed that the interior, which was hollow, held a zinc box of 1 m. by 0·7 m. by 0·4 m., containing 297 liters of alcohol. The other blocks were found in the same condition. The screw cap was carefully concealed under a layer of cement uniformly marked with the letter D. The numbers succeeded each other, and, upon each stone, there was found another mark indicating the contents in liters.

The quantity of alcohol carried by this single car was 2,465 liters. If we reflect that 100 liters of alcohol pay 70 francs customs duty and 156·25 francs excise tax, we find the sum of the taxes that were sought to be evaded to be 4,600 francs for a single shipment. Moreover, these blocks were not making their first trip, but had been used many times before.

The photograph that we reproduce herewith represents one of these stones. Here we see the box with its screw cap in the upper corner to the right, and the pieces of the stone which surrounded the box and which was admirably dressed. The controller of customs is leaning upon the box, while the officer who captured the prize seems to be very proud, and justly so, of the victory gained. The efforts made to cheat the custom house are incessant. The high import duty upon alcohol especially exercises the sagacity of smugglers. According to Mr. Maxime Ducamp, who has studied these questions in his book on Paris, "Cheating is done by means of painted tin plate cabs, which are merely large tanks; and cheating is done by shipping to Paris plates in piles of four dozen. The two dozen of the center conceal a can filled with alcohol; cheating is done with everything and for everything." — *La Nature.*

Action of Fog on Plants.

At a recent meeting of the Royal Botanic Society, the secretary said the action of fogs on plants was most felt by those tropical plants in the society's houses of which the natural habitat was one exposed to sunshine. Plants growing in forests or under tree shade did not so directly feel the want of light; but then, again, a London or town fog not only shaded the plants, but contained smoke, sulphur, and other deleterious agents, which were, perhaps, as deadly to vegetable vitality as absence of light. Soft, tender-leaved plants, and aquatics, such as the *Victoria regia*, suffered more from fog than any class of plants he knew.

TO TAR IRON PIPES.—Coat the outside with coal tar and build a light fire of shavings in the inside. This makes the coating solid. Too much heat melts the tar, so that it runs off the pipe.