to be conveyed, gave a known ſignal to the ſecond ſtation, which was Mont Martre, to prepare. At each ſtation there was a watch tower, where telescopes were fixed, and the perſon on watch gave the ſignal of preparation which he had received, and this communicated ſucceſſively through all the line, which brought them all into a ſtate of readiness. The perſon at Mont Martre then received, letter by letter, the ſentence from the Louvre, which he repeated with his own machine ; and this was again repeated from the next height, with inconceivable rapidity, to the final ſtation at Liſle.

@@The firſt deſcription of the telegraph was brought from Paris to Frankfort on the Maine by a former member of the parliament of Bourdeaux, who had ſeen that which was erected on the mountain of Belville. As given by Dr Hutton from some of the Engliſh papers, it is as follows. AA is a beam or maſt of wood placed upright on a riſing ground (fig. I. Plate DH.), which is about 15 or 16 feet high. BB is a beam or balance moving upon the centre AA. This balance-beam may be placed vertically or horizontally, or any how inclined, by means of ſtrong cords, which are fixed to the wheel D, on the edge of which is a double groove to receive the two cords. This balance is about 11 or 12 feet long, and nine inches broad, having at the ends two pieces of wood CC, which likewiſe turn upon angles by means of four other cords that paſs through the axis of the main balance, otherwise the balance would de­range the cords ; the pieces C are each about three feet long, and may be placed either to the right or left, ſtraight or square, with the balance-beam. By means of theſe three the combination of movement is very extenſive, remarkably ſimple, and eaſy to perform. Below is a ſmall wooden gouge or hut, in which a perſon is employed to obſerve the movements of the machine. In the mountain neareſt to this another perſon is to repeat theſe movements, and a third to write them down. The time taken up for each movement is 20 seconds ; of which the motion alone is four ſeconds, the other 16 the machine is ſtationary. Two working mo­dels of this inſtrument were executed at Frankfort, and sent by Mr W. Playfair to the Duke of York ; and hence the plan and alphabet of the machine came to England.

Various experiments were in conſequence tried upon tele­graphs in this country ; and one was soon after set up by government in a chain of stations from the admiralty-office to the ſea-coaſt. It consiſts of six octagon boards, each of which is poiſed upon an axis in a frame, in such a manner that it can be either placed vertically, ſo as to appear with its full ſize to the obſerver at the neareſt ſtation, as in fig. 2. or it becomes inviſible to him by being placed horizontally, as in fig. 3. ſo that the narrow edge alone is exposed, which narrow edge is from a diſtance inviſible. Fig. 2. is a representation of this telegraph, with the parts all shut, and the ma­chine ready to work. T, in the officer’s cabin, is the teleſcope pointed to the next ſtation. Fig. 3. is a repreſentation of the machine not at work, and with the ports all open. The opening of the firſt port (fig. 2. ) expreſſes *a,* the ſecond *b,* the third c*,* the fourth *d,* the fifth e, and the sixth f, &c.

Six boards make 36 changes, by the most plain and ſimple mode of working ; and they will make many more if more were neceſſary : but as the real ſuperiority of the tele­graph over all other modes of making signals conſiſts in its making letters, we do not think that more changes than the letters of the alphabet, and the ten arithmetical ciphers, are neceſſary; but, on the contrary, that those who work the telegraphs ſhould avoid communicating by words or ſigns agreed upon to express leniences ; for that is the ſure me­thod never to become expert at ſending unexpected intelli­gence accurately.

This telegraph is without doubt made up of the best number of combinations poſſible ; five boards would be inſufficient, and ſeven would be uſeleſs. It has been objected to it, however, that its form is too clumſy to admit of its being raised to any conſiderable height above the building on which it stands ; and that it cannot be made to change its direction, and conſequently cannot be ſeen but from one particular point.

Several other telegraphs have been propoſed to remedy theſe defects, and perhaps others to which the inſtrument is still liable. The dial-plate of a clock would make an ex­cellent telegraph, as it might exhibit 144 ſigns ſo as to be viſible at a great diſtance. A telegraph on this principle, with only six diviſions inſtead of twelve, would be ſimple and cheap, and might be raiſed 20 or 30 feet high above the building without any difficulty : it might be ſupported on one poſt, and therefore turn round, and the contraſt of colours would always be the ſame@@.

A very ingenious improvement of the telegraph has been propoſed in the Gentleman’s Magazine. It conſiſts of a ſemicircle, to be properly elevated, and fixed perpendicular­ly on a ſtrong ſtand. The radius 12 feet; the ſemicircle conſequently somewhat more than 36. This to be divided into 24 parts. Each of theſe will therefore compriſe a space of 18 inches, and an arch of 7⁰ 30' on the circumfe­rence. Theſe 24 diviſions to be occupied by as many cir­cular apertures of six inches diameter ; which will leave a clear ſpace of six inches on each ſide between the apertures. Theſe apertures, beginning from the left, to denote the let­ters of the alphabet, omitting K, J conſonant, V, X, and Q, as uſeleſs for this purpoſe. There are then 21 letters. The four other ſpaces are reſerved for signals. The inſtru­ment to have an index moveable by a windlaſs on the centre of the ſemicircle, and having two tops, according as it is to be uſed in the day or night ; one, a circular top of lacquer­ed iron or copper, of equal diameter with the apertures (and which conſequently will eclipſe any of them against which it reſts) ; the other, a ſpear or arrow-ſhaped top, black, and highly poliſhed, which, in ſtanding before any of the apertures in the day-time, will be diſtinctly viſible. In the night, the apertures to be reduced by a diaphragm sit­ting cloſe to each, so as to leave an aperture of not more than two inches diameter. The diaphragm to be of well- poliſhed tin ; the inner rim lacquered black half an inch. All the apertures to be illuminated, when the inſtrument is uſed in the night time, by ſmall lamps ; to which, if neceſ­ſary, according to circumſtances, convex lenſes may be added, fitted into each diaphragm, by which the light may be powerfully concentrated and increaſed. Over each aperture one of the five priſmatic colours leaſt likely to be miſtaken (the remaining two being leſs diſtinguiſhable, and not want­ed, are beſt omitted) to be painted ; and, in their natural order, on a width or eighteen inches and a depth of four, red, orange, yellow, green, blue ; or, ſtill to heighten the contraſt, and render immediately ſucceſſive apertures more diſtinguiſhable, red, green, orange, blue, yellow. The whole inner circle beneath and between the apertures to be painted black.

When the inſtrument is to be uſed, the index to be ſet to the ſignal apertures on the right. All the apertures to be covered or dark when it begins to be uſed, except that which is to give the ſignal. A ſignal gun to be fired to appriſe the obſerver. If the index is ſet to the firſt aper­ture, it will denote that words are to be expressed; if to the ſecond, that figures ; if to the third, that the figures ceaſe ; and that the intelligence is carried on in words. When fi­gures are to be expressed, the alternate apertures from the left are taken in their order, to denote from 1 to 10 inclu-

@@@[mu] English Review, June 1896.

@@@[mu] Supplements for 1794.