strengthened with buttresses and by filling up its arches, so that the greater part of the west side is now a solid brick wall (Fig. 13), though at one point on the left the progressive history of its evolution can be more clearly studied. On the east side, on the other hand, of which Fig. 14 gives a general view, the various additions can be plainly discerned. Canina (*Edifizi*, vi. tav. 147) gives plans, reconstructions, and views of it, which furnish a general impression, but require revision and amplification in details. The original bridge for the Anio Vetus measured, according to his calculations, 81·10 metres in length, 11·20 metres in height, 2·75 in thickness; when that for the Marcia was added, on the east side, these measurements were increased to 88·90, 16.60, and 12·00 metres; while by the addition of the Claudia and Anio Novus they rose to 155·00, 31·60, and 14·10 respectively.

The full width is not, however, carried right up to the top of the aqueduct, but only as far as the roof of the channel of the Marcia, the Claudia and Anio Novus being carried upon a narrower superstructure, 2·10 metres wide, which at first consisted of stone arches, but was later transformed into a solid wall of concrete, and perhaps made somewhat higher at the same time. The space above the level of the Marcia, which was not occupied by this superstructure, some 12 metres in width, served as a roadway, and now gives ample space for a group of peasants' huts; while upon the summit of the aqueduct there was a footway leading to the ventilating and cleaning shafts of the uppermost aqueduct. The question may arise as to the method in which, when one channel ran precisely above the other, repairs were effected to the lower. Canina (*Edifizi*, v. 66), indeed, asserts that near Roma Vecchia, where the Iulia and Tepula run above the Marcia, he detected apertures in the floor of their channels so as to allow workmen to penetrate into that of the Marcia; Lanciani, however (*op. cit.* 299) states that he failed to discover any traces of them, and that he only saw lateral ventilation holes.

At Ponte Lupo we may notice again the care taken to avoid too great a strain upon the bridge; the aqueducts are carried along the north side of the valley on lofty buttressed substructures for some distance, and then turn at right angles immediately before passing over the bridge.

To the west of the bridge, at some distance from it, I found a *cippus*, or boundary stone, of tufa, belonging probably to the Anio Vetus, lying in a field—a block of tufa 0·52 metre in width; it had a total length of 1·10 metre, of which 0·44 metre remained below ground, and in the centre of this portion was a round hole 0·20 metre in diameter, going right through the stone; through it, one would imagine, a beam was run so as to prevent it from being easily upset. Such a hole is a characteristic of these *cippi*. The inscription (if the stone bore one) was upon the lower side; but from its position one would have been inclined to suppose that it was the one bearing the number 669, seen by Garrucci in 1861, were it not for the fact that he records that the one he saw was of travertine—a somewhat surprising fact, considering that we are in a tufa district; and one wonders whether there may not be a slip in his description. The *cippus* of which he speaks, and another one, bearing the number 659 (also of travertine) were both copied by him *in situ* in two localities near Gallicano, but subsequent investigators have been unable to find them; the name of the aqueduct is, unfortunately, lacking, but, having regard to the fact that at Carciano the numbering of the *cippi* of the Marcia is ninety-five lower than that of the Anio Vetus (unless we have to suppose that No. 901 of the former had been brought a long way from its original position), these *cippi* should probably be attributed to the Anio Vetus (see *C. I. L.* vi. 31,570, a, b). For, at a distance of some 1,600 metres in a straight line from the point where the fallen tufa *cippus* lies, a tufa *cippus* still stands *in situ* of the same size, and bearing the number 645; the name of the aqueduct is not legible; but on the further side of the ravine (the Valle Serra) is another not *in situ*, bearing the number 626, upon which the name of the aqueduct ANI can clearly be read. Both are published by Lanciani in *Bull. Com.* 1899, 38: I have since verified the reading of the latter, and found that the number must be 645. If the usual interval of 240 ft., which occurs on each of these two stones, is preserved, the distance between the two must have been 1,350 metres, so that No. 626 must have fallen from the hilltop; and even so, it is a little difficult to make up so great a distance. For only some 300 metres in a straight line from No. 645 is a fine bridge, bearing the name of Ponte Taulella, or Tavolella (Fig. 15), marked under the former name in the Staff Map (which gives no indication of its nature), but otherwise absolutely unknown.

The total height is some 13 metres; and it is 13·40 metres wide at the base, which is formed of masonry of tufa. From this springs a brick arch, 4·10 metres in width, which has later on been reinforced on each side by a mass of concrete 4·65 metres thick, faced with brick and *opus reticulatum*. Some of the bricks of the arch still bear stamps, which we were, unfortunately, unable to read with an opera-glass.

The channel of the aqueduct, in *opus reticulatum* and brickwork, is 1·18 metre in width, and over 2·00 metres in depth, with characteristic dark crumbling deposit.

Some 700 metres further up the valley are the scanty remains (a few blocks of stone and a mass of concrete, still adhering to the south-west bank of the gorge) of a bridge which may be attributed to the Marcia. According to the plan published in Fabretti's *De Aquis et Aquaeductibus* (*opp.* p. 90, in the second edition only), which probably appeared originally in a controversial work of his against Gronovius, entitled *Jasithei ad Grunnovium apologema*, Naples, 1686,* in which he indignantly rebutted the criticisms brought by the Dutch scholar against his work on the aqueducts) the Claudia and Anio Novus crossed this ravine just to the north of the village of Gallicano. Here there are no traces of any ancient bridge; but the road bridge immediately to the south of Gallicano, which crosses the Fosso di Caipoli, is built upon an aqueduct bridge in *opus quadratum* of brown tufa, consisting of several arches, which is also indicated by Fabretti. It seems to have been about 3·10 metres in thickness originally (3·62 metres including some later strengthening in brickwork), and to have carried the Claudia and Anio Novus, as he also supposes.

The next road bridge, 4·70 metres in total thickness (originally 2·82 metres), constructed of the same materials, immediately to the north-west of the Ponte Amato of the Via Praenestina (*Papers, cit.* i. 208), seems to have carried the same pair of aqueducts; and in the cutting of Cavamonte, immediately to the south-west, two ventilating shafts on opposite sides of the road, both cut in the rock, and provided with footholes, may still be seen. That on the north-west was rectangular; the only side that can be measured is 1·46 metre long; the other is also rectangular (1·25 by 1·07 (?) metre), but had originally a round top, of brickwork, and is, therefore, probably that of the Anio Novus.

On emerging from the cutting, and crossing the modern road between Ponte Lucano and Zagarolo, which runs through the Valle Inversa, we see a long line of brick substructures, supported by buttresses. At the point where a small stream passes under it, there is a low single-arched bridge remaining; the arch was of large blocks, and carried the channel of the Anio Novus; this is 1·20 metre in width, and its walls, faced with brick inside, and *opus incertum* out, are 0·70 metre thick. In a period of fairly good construction this was strengthened by a wall of brick-faced concrete 0·74 metre thick on each side; the brickwork is good, and a small ornamental cornice in the same material was added. Further additions became necessary, however, and on the north side we find two successive additions, one 1·35 metre thick, faced with brick, the other a buttress 0·97 metre thick of late date, faced with *opus mixtum*; while on the south side a mass of concrete no less than 3·10 metres thick has been added.

Of the Claudia there are no certain traces at this point, though a curving wall of *opus reticulatum* may perhaps belong to it (*Papers, cit.* i. 205). After a short tunnel under the Colle Farina, the aqueducts reach the Ponti Diruti; but before we speak of these remains, we must return to the Anio Vetus and Marcia, which we had left in the Valle Serra. The former passes through the long narrow ridge to the south-west (the Colle Caipoli) by a tunnel; clear traces of deposit, marking a shaft, can be seen upon it. In the next valley (the Valle della Mola), close to the point of union of the Fosso di Caipoli and the Fosso Collafri, are remains which it is somewhat difficult to understand. The former stream turns at right angles just before entering the latter, and close to their junction was crossed by three single-arched bridges of *opus quadratum*, side by side. The furthest upstream is the lowest, and is 3·50 metres wide, the next, at about 2 metres distance, is rather higher, and is 4·50 metres wide. On each side of it is the *specus* of an aqueduct 1·24 metre wide, with a pointed roof formed of two slabs 1·20 metre long and 0·42 metre thick, inclined towards one another. The deposit on the roof (where the foulest material would not be found) is hard and crystalline, and looks like that of the Aqua Marcia; there are, however, as we shall see, bridges which must be assigned to this aqueduct further up both streams, so that the conclusion that we here have the Anio Vetus seems inevitable. There is yet another bridge, which now carries a footpath, the only one of the three which still preserves its arch intact. It has two rows of voussoirs, each about 0·38 to 0·40 metre deep, while the horizontal courses are 0·45 metre high; and it is only 1·70 metre wide, and 10·50 metres in length. It does not seem to have carried an aqueduct, and, indeed, there is no trace of any other channel hereabouts beyond the one already referred to. A little further down on the south-east bank are some remains of a lofty construction in *opus mixtum*, against one side of which is a great mass of aqueduct deposit 6 ft. thick; while on the north-west are traces of structures which may have been clearing tanks, with a rock cutting about 0·50 metre wide, intended perhaps for the discharge of waste water into the stream. Further on again are apparently the remains of a villa.

The aqueduct, instead of crossing the second stream (the Fosso Collafri) at once, seems to have run a little way up the valley, for on its north-east side, by the road to a modern mill, are three shafts lined with *opus reticulatum*, each about 1·20 metre square, at a distance of 31·75 metres (about 107 Roman feet) from one another. One would suppose that these might be connected with the aqueduct, though the interval is shorter than usual. The exact point where it crossed the stream cannot, however, be determined. It might, indeed, be supposed that it continued to run upstream for another 500 metres, and then crossed by a small and well-preserved bridge, which still exists, and is known as the Ponte della Bulica, were it not for the fact that there is another bridge in the next valley to the north-east (that of the Fosso di Caipoli) which must be assigned to the Marcia, and which corresponds in position with this one. We must, therefore, assume that the exact point of crossing of the Anio Vetus has been lost, and temporarily (until the question can be settled by

* The book is a rare one, and is mentioned by Cicognara, *Catalogo*, ii., No. 3,709.