

EXCAVATIONS IN THE ROMAN FORUM.

The remains of the northeastern part of the Forum present considerable interest, especially after the recent excavations which Commendatore Boni is making, and much light is being thrown upon the plan of the Forum, thus settling some of the discussions which have arisen upon the subject. Our present engraving shows some of the main points of interest in that part of the Forum which lies to the west of the Arch of Septimius Severus. In the foreground are the remains of the Basilica Fulvia, one of the constructions of the early period, which was modified considerably in after times. In the rear of the Temple of Antoninus and Faustina, one of the landmarks of the Forum. The Sacra Via, the main avenue of the Forum, whose exact position has been so much disputed, has been found according to the recent excavations to lie along the northern side. It passes in front of the two last-named structures and lies underneath the level ground seen on the right of the engraving.

As regards the Basilica Fulvia (of which only the central part built of tufa blocks and part of the portico is now standing) the censor, M. Fulvius Nobilior, founded this edifice in the year 179 B. C. and gave it his own name. Later on, M. Aemilius Lepidus, during his consulate in 78 B. C., restored the building considerably, and ornamented it with bucklers upon which were engraved the portraits of his ancestors. A reproduction of the basilica restored and ornamented in this way now exists upon a medal of the time of Lepidus. It is probable, however, that he did not finish the work upon the building, for only 25 years later we see that Lucius Aemilius Paullus took up the work and received 1,600 talents from Cæsar for this purpose. From this time on, the edifice took the name of Basilica Paulli. It was badly damaged in the fire of the year 740 of Rome, and the work of restoring it was carried out by Augustus and some of the members of the Aemilia family. The splendid Phrygian columns (*pavonazzetti*) which Valentinian and Theodosius gave to the Basilica of St. Paul in 386 A. D. came from the building which Augustus restored.

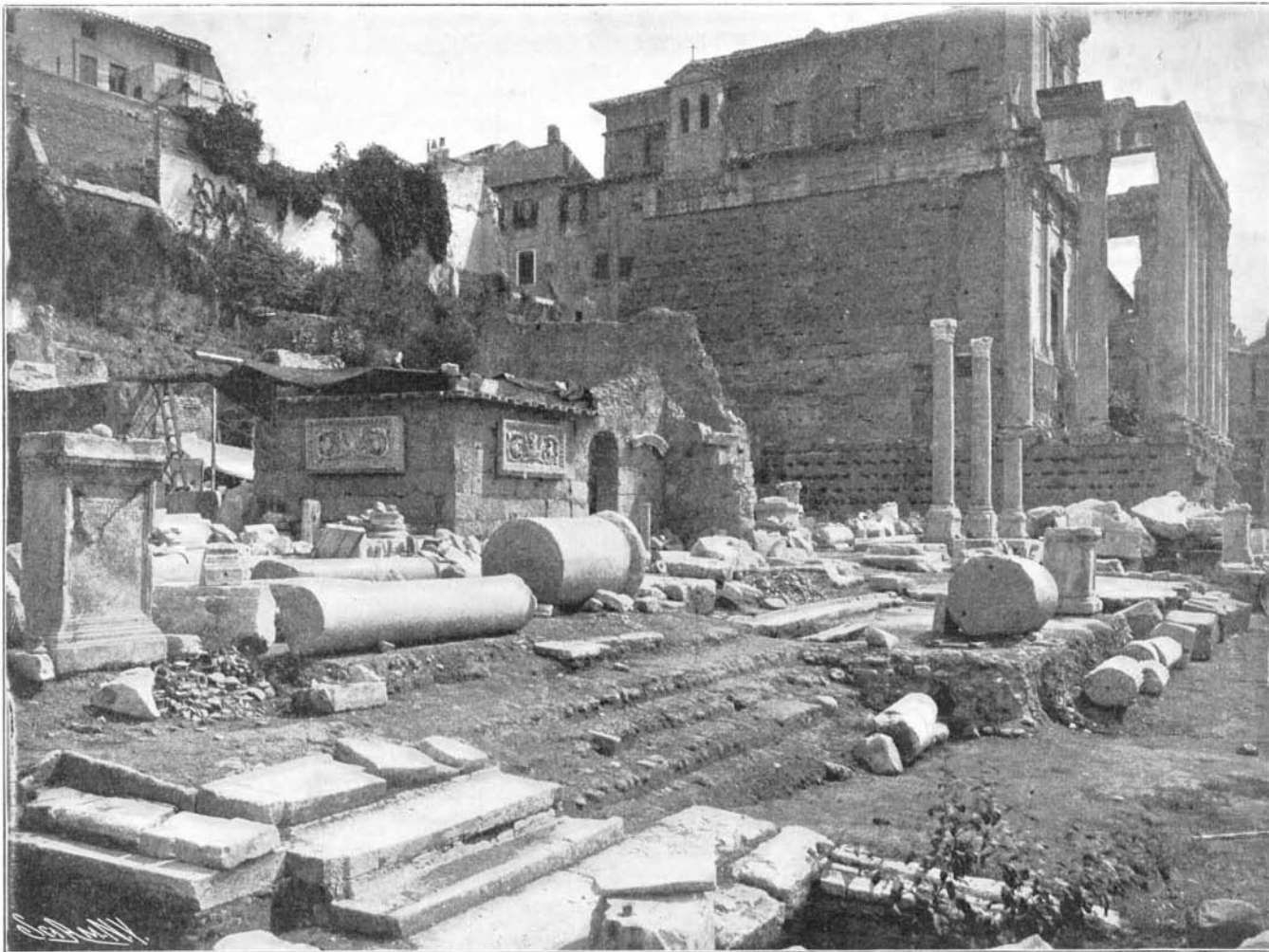
In the fifth century, the Basilica Aemilia no longer existed. On its site had been constructed a portico, which was probably commenced under Petronius Maximus, prefect of Rome, and completed by Theodoric. To the edifice which they erected belongs the pavement formed of small blocks of marble of different colors, representing geometric forms. The columns of red granite with their pedestals and capitals of white marble (three of which can here be seen) were taken from different edifices and were adapted to the main structure as best might be. The ancient basilica contributed to this building with the old walls constructed of large tufa blocks (some of which still remain, as will be observed), also with a dozen columns adapted to the portico. This colonnade was of considerable length, nearly 200 feet long, and ran along the Sacra Via.

To the ancient structure also belongs the pavement of African marble, and two fragments of an architrave on which traces can still be seen of an inscription showing the reconstruction of the building by Aemilius Paullus, also fragments of a frieze ornamented with bucranes and large pateræ. The place which was occupied by this long portico or colonnade can be easily distinguished on the present site, and also some of the marble slabs which formed the pavement still remain. Some sections of the large marble columns are still left.

At the farther corner of the structure, next the Temple of Antoninus and Faustina, were discovered not long ago the remains of a monumental inscription

in honor of Lucius Cæsar, the adopted son of Augustus. The colossal fragments on which the inscription is cut have been left in the place where they were found. They no doubt keep the exact position which they took when the old edifice fell in ruins or was overthrown during the Middle Ages. It is impossible to say to what monument this colossal inscription belonged. Perhaps Augustus, when reconstructing the Basilica Aemilia, added a portico to which he gave the name of his two nephews Lucius and Caius Cæsar.

Until the recent excavations were made, archaeologists were not sure as to the exact direction of the Sacra Via, the main avenue passing through the Forum, which was the scene of so many events in the history of the capital. It was formerly supposed that it passed through the middle of the Forum, but the excavations which Commendatore Boni recently made have proved that it ran along the northern side, tracing a line which started from the Arch of Septimius Severus and passed in front of the Basilica Aemilia and the adjoining Temple of Antoninus and Faustina, therefore skirting the colonnade whose remains are visible in the engraving. The actual pavement of the ancient avenue lies, however, far below the level of the present ground. At the corner of the Basilica of Constantine (lying farther back of the Temple) a considerable portion of the old pavement has been discovered. It is formed of large polygonal slabs of basaltic lava. The pavement which has been uncovered so far lies about 8 feet below the ground level and is in a good



THE NORTHEASTERN CORNER OF THE ROMAN FORUM.

state of preservation, with the blocks well joined together.

Chemical Studies.

The Agricultural Department's experiments with food preservatives involve the examination of 5,500 samples. A study of the changes in the composition of apples under its methods of cold storage has been continued in collaboration with the Pomologist. A study of olive oil and its adulterations has been completed. About 1,500 analyses were made in the insecticide and agricultural water laboratory. These included toxicological examinations to determine whether bees were killed by poisons used in spraying. In the laboratory work on sugar done for the Treasury Department the number of analyses reported was 1,744. In the Bureau Laboratory over 1,000 analyses were made, 807 of which were reported to the Dairy Division of the Bureau of Animal Industry. The difficulty of distinguishing between butter produced by feeding cotton seed or cotton-seed meal and that to which foreign fats have been added will be the occasion of special study during the coming year.

At the forthcoming St. Louis Exhibition the United States Steel Company will make an exhibit that will cover two acres of floor space. It will be the first exhibit of so wide a scope ever attempted, and will cover every branch of the industry.

A Balloon School for Military Students.

Great Britain is trying hard, after the terrible lessons of the South African war, to set her house in order—at any rate, as regards her army. The country is, however, greatly handicapped in being so small and so thickly populated, rendering it a matter of immense difficulty to get suitable grounds for military maneuvers on a large scale. Aldershot has become altogether too small, owing to the extended range of the modern small-bore rifle; and even Salisbury Plain abuts on many large towns. At Aldershot is established one of the most extensive military balloon factories and schools, among the fighting forces of Europe. It is presided over by a lieutenant-colonel, under whose supervision the balloons are constructed and filled. He also has in charge a kind of military balloon "academy," in which young officers are taught to take important observations from great heights, as well as the making of maps and taking of photographs from both free and captive balloons.

A visit to the Aldershot military balloon factory is most interesting. One commences with the work-rooms, in which the girls are sewing together sections of gold-beaters' skin, or great sheets of the finest Chinese silk. The skin is best, however, as being impervious and less likely to let the gas escape. Next come the rope and cordage rooms; the making of the cars or baskets; the chemical department, in which the hydrogen gas is prepared; and lastly the great pit in which the filled balloons are kept on field-days.

Each military balloon carries from two to five officers, each of them a trained observer, map-maker, or photographer. The balloons are frequently taken out either collapsed altogether, or only half filled, and wagons go with them containing stacks of cylinders of gas. When the battleground is reached, the tubes are laid on and each balloon fully inflated, and the telephone fixed which is to connect the officers in the car with the tent of the General Staff below. Then all is ready for the ascent. From the foregoing it will be seen that the most common form of military balloon is the one held captive by means of steel wires; and the whole concern, at a height of from

1,000 to 3,000 feet, can be towed along by horses, all the while being kept in close communication with the Headquarters Staff, who are kept constantly advised as to the movements of the enemy and his general dispositions.

A course of military ballooning is now quite the thing in European armies; and it is an interesting fact that a large number of Japanese staff officers have been instructed by Col. Templer's disciples, who volunteered to go out and teach them years ago. In fact, there is no branch of modern military science (or naval science either for that matter) in which the Japanese do not excel.

The Current Supplement.

The Boro Budur temple of Java is the subject of the opening article of the current SUPPLEMENT, No. 1474. Mr. Charles H. Stevenson discusses the subject of seal and walrus oils. An elaborate article on the Hudson River tunnel, with illustrations clearly explaining the nature of the work and the difficulties to be overcome, forms not the least interesting feature of the issue. "The Construction of Steel Cars" is the subject of a paper recently read before the Institution of Civil Engineers in London. The paper is abstracted in the SUPPLEMENT. Of astronomical interest is an excellent article on giant and miniature suns. The paper on Korean head-dresses in the National Museum begun in the last number is concluded.