of these offices is a clock which is corrected daily, at noon of standard time, by means of an automatic attachment (the invention of Mr. W. F. Gardner, the instrument-maker of the observatory), actuated by the current which makes the signal for dropping the time-ball at the observatory, and on the Western union telegraph company's building in New York.

In the publication of its annual volumes, the observatory has been much embarrassed, owing to the limited amount of the printing-fund of the department. The volume for 1880, which it was expected would be ready by the 1st of January, was not received until October; and the computations, even with the small working force available, have been carried much beyond the printing.

In regard to the proposed new observatory, the superintendent says, —

"I cannot too earnestly urge upon the bureau the necessity of commencing the buildings for the new observatory. The ground having been purchased, and the plans made and approved, there seems to be no good reason why the construction should not begin. The present site is notoriously unhealthy, and the buildings are dilapidated and much in want of repair; and it would not be in the interest of economy to make any extensive repairs while the erection of new buildings is in contemplation. The delay is very prejudicial to this establishment in particular, and to the cause of science in general. I respectfully request, that, if all the money cannot be appropriated for the purpose aforesaid at the coming session of congress, a portion of it, at least, may be asked for, in order that this work, now so long delayed, may be begun."

An estimate of $586,138 is submitted for erecting the necessary buildings.

An appendix contains a report by Professor William Harkness, showing the progress made in the reduction of the transit of Venus observations. The photographic negatives (over fifteen hundred) have all been measured, and very considerable progress has been made in the computations necessary for the reduction of these measurements. An extended investigation is now being made of the focal lengths of the photographic objectives, and the radii of curvature of the heliostat mirrors.

BANDELIER'S ARCHEOLOGICAL TOUR IN MEXICO.

The author of the report before us is well known in New-England archeological circles, having won for himself a fair name through the publication of three essays, — on the art of war and mode of warfare, the distribution and tenure of land, and the social organization and mode of government, in ancient Mexico. In consequence of these scholarly discussions, the archeological institute, in 1880, commissioned Mr. Bandelier to investigate the condition of the sedentary Indians of New Mexico, and in 1881 a second time commissioned him to carry out an archeologic exploring-tour through Mexico proper. The report under consideration, profusely illustrated, and numbering three hundred and twenty-six pages, gives a full account of the results of Mr. Bandelier's studious researches on his second expedition.

Report on an archeological tour in Mexico, 1881. By Adolph F. Bandelier. Boston, 1884. Published in Papers of the Archaeological institute of America. Series II.

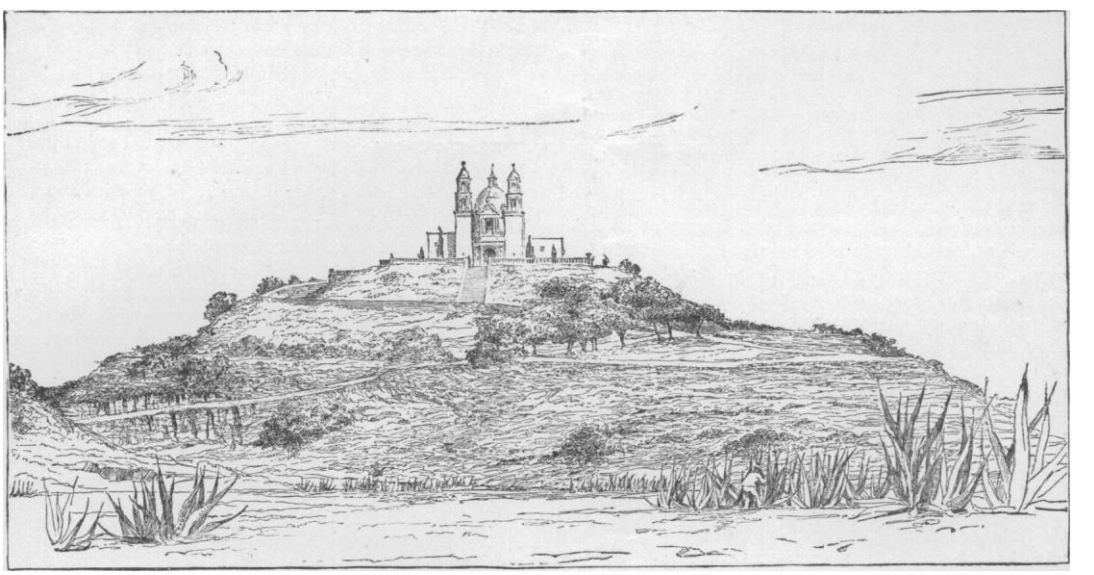
The account, it seems to us, has assumed rather the form of a scientific narrative than that of an official report made to a committee. The author was able to draw upon an immense stock of preparatory studies; and, accustomed to look at ancient Mexico through the spectacles of the chroniclers, the objects that strike his eye at each step on the classic soil remind him of some passage read, the true meaning of which he now strives to detect, with the help of ocular inspection and learned reasoning. Thus, also, the grandeur of the surrounding scenery invites him to give us data of hypsometry and meteorology, of vegetation and interesting culture-plants. He compares statistics of old with those of the present time, and cautiously avoids entering into controversy with the theories urged by other scholars or non-scholars to solve the origin of the mysterious temple and palace builders of Mexico. To be brief, by a very adroit interspersion into his text of nicely presented scientific *causeries*, Mr. Bandelier, it appears to us, may have secured for himself a larger number of readers than if he had chosen to offer a compact and matter-of-fact report.

The text is divided into four chapters. In the first chapter the author, reposing on a steamer's deck, calls us to his side, and, pointing toward the vast main, allows us to partake of the rich stock of his reminiscences. He tells us of the legends hovering around the ancient province of Huasteca, its forest-buried cities, the colossal structures of Papantla and Misantla, and deplores the fact that a thorough exploration of these hitherto but vaguely described ruins is beyond the limits of his mission. On his road from Vera Cruz to the capital, he engages in discussions on the *étapes* once taken by Mexico's first conqueror, the natural and artificial obstructions that Cortez met with, and the allies he was so fortunate as to secure in the Indians of Tlascala. After Mr. Bandelier's arrival in the capital, he very judiciously sets forth to acquaint himself with the best authorities in Mexican archeology. He takes their advice and suggestions, carefully examines the objects of antiquity preserved in the museum, and collects valuable data on the former expanse and limits of the renowned lagoons, and the modern efforts made for their regulation and draining (pp. 49–78). In the third chapter, Mr. Bandelier's independent and main work is given. It bears testimony to the most thorough exploration ever made of the often-described pyramid of Cholula, its structure, appendages, and surroundings. No hewn stone, no sculpture, no masonry or mound, remains unexamined; and no hint picked up from ancient reports, if serving his purposes of reconstruction, is slighted, but dexterously employed to give fuller shape and brighter color to the picture we are wont to form of the once stately and now decaying fabric. He succeeds, finally, in showing that in former times the giant pyramid did not stand isolated, but east and west of it were two companions, considerably smaller, however, and of the well-known teocalli-shape,

truncated, and with staircases, like the pyramid itself. As to the material of which the latter was constructed, Mr. Bandelier arrives at the conclusions of A. v. Humboldt and his successors; i.e., that it was built of large sun-dried adobes. Burnt lime for coating or for mortar, Mr. Bandelier discovers, was never employed by the Indians; pulverized limestone being prepared for the purpose. No shaft has as yet been sunk in order to ascertain whether the interior of the pyramid is of the same material as the exterior, or whether the structure was made around a natural mound, or whether it is hollow, and possibly contains some sepulchral vault of historic importance. According to tradition, the platform was crowned with a temple, in which Quetzalcohuatl, the god of air, was worshipped. The current opinions about this mysterious being are learnedly discussed.

From Cholula the traveller directs his steps southward, and visits the valleys of Oaxaca, the famous ruins of Monte Alban, Xagá, Mitla, and others. Vivid description is given of all of them, copious and careful measurements secured, and sketches as well as illustrations presented, of hitherto unobserved details.

Did Mr. Bandelier, as we presume, set forth on his exploring tour inspired by the hope of detecting in the architectural remains of Mexico proper such elements as would tend to prove these remains to represent some final stage of tectonic development, of which the initial stage must be sought in what he calls the 'tenement houses' of the sedentary Indians in New Mexico, he must have felt somewhat disappointed with the result of his investigation. We are of the positive opinion, that if in plan, as well as in execution, he had met in Mexico's architecture any traces pointing either to an intimate or only to a remote historic connection with the window-houses of the Indians of the north, he would have exulted over such discovery, and have expounded its adaptation to a certain theory that was advanced by the late Lewis H. Morgan, whom Mr. Bandelier looks up to as to a beloved teacher and friend. Not to have yielded to the temptations of a pre-occupied mind is a merit which deserves full and fair acknowledgment. It shows the faithfulness of Mr. Bandelier's observation and the conscientiousness which he brought to bear on the fulfilment of his scientific task.



THE GREAT MOUND AT CHOLULA.[1]

[1] Reproduced by permission of the Archaeological institute.

THE ARGENTINE ZONE CATALOGUE.

THE work for which Dr. Gould went to South America fourteen years ago, as astronomer to the Argentine Republic, is at last completed, and both the zone-lists and the star-catalogue compiled from them are published. It is not for us in a non-technical journal to discuss the purely astronomical value and accuracy of such a work, but rather, in announcing it, to recall to the contemporaries of this eminent astronomer, and bring to the attention of the younger men, — who have, even during the long progress of the work, attained an age at which they may appreciate it, — this monument of patient determination, executed under trials that might well be termed privation, exile, and affliction. During the disheartening delays in constructing the observatory and mounting the instruments, the 'Uranometria argentina,' a worthy

Zone catalogue. Mean positions for 1875.0 of the stars observed in the zones at the Argentine National observatory. By BENJAMIN APTHORP GOULD. Cordoba, 1884. 2 v. 4°.