

supplied in Baltimore, will have more than a merely local interest.

The students and instructors of the university whose work naturally inclines them to out-of-door explorations are associated in what is known as the Naturalists' field-club; and it was decided by the members of this club, that a map on a scale of a mile to the inch, covering an area twenty-five miles square, with the city-hall of Baltimore as its central point, would amply supply all present needs. The difficulties in the way of the construction of such a map were, however, considerable. The cartographic materials already existing were very fragmental, and varied much in their form, scale, and reliability, while the great cost of a new survey of so large an area was out of the question. Mr. Albert L. Webster, however, who had had four years' experience as topographer on the U. S. geological survey, submitted a plan to the trustees of the university, which met with their hearty approval.

All maps, of whatsoever kind, relating to the area in question, were collected and carefully compared, the most accurate of them being reduced to a uniform scale. A drawing on the scale of two inches to a mile was then commenced, upon which, however, only the most reliable material—the work of the U. S. coast-survey, which covered about one-third of the entire area—was incorporated. The remainder of this drawing was left blank, with the intention of placing upon it in future only such material as is up to the standard of the coast-survey work. For the remaining two-thirds of the area a tracing was made from the best existing sources, and the two together (drawing and tracing) reduced one-half, and photolithographed. The present published map, therefore, is on a scale of one mile to an inch, and represents the best existing information relating to the vicinity of Baltimore. It is, however, not in any way to be regarded as complete or final, but only as the first step toward the attainment of a really good representation of the region. It is doubtless faulty in many particulars, and is certainly very deficient in showing no topography. With a view to its improvement, any suggestions relating to either details or the general character of the map, as well as any information regarding accurately determined elevations within the area, are earnestly solicited from all persons who may make use of it. In this way it is hoped that the map may be a constant growth, improving year by year through the criticism and suggestions of those interested in it.

After the original drawing has once been made, the cost of embodying improvements and publishing successive editions is not large, and may easily be defrayed by the sale, at a moderate price, of the printed copies. The Baltimore maps, cut into sections and mounted on linen, folding into a pocket-case, are sold at a dollar each.

These details are given in the hope of eliciting suggestions, or of inciting similar clubs, in other cities where a good map is as much needed as in Baltimore, to start the development of something of the same kind.

THE NEW-YORK AGRICULTURAL STATION.

Second annual report of the board of control of the New-York agricultural experiment-station for the year 1883, with the reports of the director and officers. Albany, Weed, Parsons, & Co., pr., 1884. 279 p. 8°.

IN the space at our command it is impossible to make any adequate review of the large amount of valuable work which we find in the New-York report. In general it may be said that it partakes of the characters of both the classes of experiments spoken of in our comments on p. 509. Some of it lies on the border-land between the two, yielding results of more or less immediate value to both science and practice. We include here such experiments as those upon methods of cutting seed-potatoes; the influence of depth, and distance apart, of planting, upon the crop; the effects of mulching, cultivation, root-pruning, and the like. Others are more distinctively scientific in their aim, such as the lysimeter observations, the notes on hybridization in maize, the experiments upon the influence of food upon milk and butter production, etc.

Perhaps the most noteworthy portion of the report is its proposed method of classification of artificial varieties of plants for purposes of identification. This method is based on the belief, confirmed by two years' observations, that those portions of the plant for whose sake it is especially cultivated are comparatively constant in form within the same variety, under the circumstances of cultivation, while the agriculturally unimportant parts may show considerable variations. For example: the roots of any particular variety of beet will show comparatively little variation, while the tops may present very considerable differences. Artificial selection has here impressed certain desired qualities upon the root, but paid little or no attention to the tops.

Proceeding upon this belief, it is proposed to base the classification in 'agricultural botany' upon the agriculturally important part of the plant. Thus all root-crops would be united into one class, irrespective of their ordinary botanical relationships, this class to be subdivided into smaller groups in accordance with the form of the root.

Such a method of classification for a particular purpose would appear to be legitimate. Its final justification is to be sought in its success, and of this it is too early to judge. When the observations shall have been extended over a term of years, and the constancy

of varieties established, agricultural botany may prove of much value to the farmer, gardener, and seedsman. Until then it belongs in the category of hopeful experiments.

MINOR BOOK NOTICES.

A treatise on the adjustment of observations, with applications to geodetic work and other measures of precision. By T. W. WRIGHT, B.A., late assistant engineer U.S. lake-survey. New York, Van Nostrand, 1884. 437 p. 8°.

THE student of the method of least squares often fails to grasp the true meaning and significance of the method, from the want of illustration and well-chosen applications. The chief merit of Mr. Wright's book is in the collection of examples which have been drawn from the records of actual work in which the author has been engaged. Besides the application of the methods of least squares to the results of triangulation and of levelling, a chapter is devoted to these methods in relation to line-measures in general, and to the calibration of thermometers.

There are some observers who are tempted to believe in the infallibility of certain criteria proposed by different writers for the determination of the weight of observations. There are others who reject the mathematical criteria, and prefer graphical methods as guides to a correct judgment. Mr. Wright is one of those who prefer to look at observations from the practical observer's point of view. His treatise will therefore be of interest to the mathematician who desires to frame criteria which will represent more closely the results of experience, and will prove of great utility to the practical man.

Recent progress in dynamo-electric machines, being a supplement to dynamo-electric machinery. By Prof. SYLVANUS P. THOMPSON. New York, Van Nostrand, 1884. (Van Nostrand sc. ser., No. 75.) 113 p., illustr. 24°.

THE writers who rapidly assimilate the advances in electrical engineering, and present their knowledge to the public in an intelligible way, are doing very useful work. The treatises of Professor Thompson are increasing upon the electrician's book-shelf. The time has not arrived for a standard treatise on electrical engineering, on account of the rapid changes and development of the subject. Until we can have such a standard treatise, we must rely upon brochures like this latest production of Professor Thompson.

The reader will find in it an account of Mr. Hopkinson's modification of the Edison dynamo, and also a description of the latest modifications of the Gülcher machine, and also of the Thomson-Ferranti machine.

Wonders and curiosities of the railway; or, Stories of the locomotive in every land. By WILLIAM SLOANE KENNEDY. Chicago, Griggs, 1884. 16+254 p. 12°.

ONE is a little startled, on opening this book, to find mentioned the "huge, ample-shadowed foundry; the peculiar fragrance of burnt earth and iron; . . . the boy controlling the huge steam-hammer; . . . and, finally, the great crane that lifts up the monster in chains, and carries it to the doorway, and sets it down in all the resplendence of its polish and paint, ready to begin its thirty years of toil," with nothing predicated of them; but is relieved immediately by the statement that 'this is the building of the locomotive.' This introductory chapter, in which 'our old Homeric poet Whitman' receives praise, and which may have been written by him, should not, however, deter the reader from going deeper into the book. From chapter ii. on, the writer tells the anecdotes he has collected in regard to the railway, and has succeeded in bringing together a most entertaining collection. The account given of the Quincy railway must change the impression that many have of that so-called 'first American railroad.' The chapter on the 'locomotive in slippers' is devoted to the history of the railway in the east, and at times is especially amusing. The author also touches upon the 'vertical railway' (the elevator), upon the various mountain railways, and upon the recent attempts to use electricity as a transmitter of power.

NOTES AND NEWS.

A CONFERENCE to formulate plans for the systematic observation and discussion of earthquakes was recently held in the rooms of the U.S. geological survey in Washington, at which there were present Messrs. Powell, Dutton, and Gilbert, of the survey, Abbé and Marvin of the signal-service, Paul of the naval observatory, Rockwood of Princeton, and Davis of Harvard college. It was decided that three classes of observations should be attempted; the first class consisting of those made by self-registering seismometers of approved pattern, upon which Messrs. Paul, Rockwood, and Marvin are to report at an early date. The second-class observations will be chiefly to determine the time of shock, probably by means of a