

23. Glasgow	2,080	27. Columbia	1,816
24. Rome	1,916	28. California	1,731
25. Barcelona	1,887	29. Cornell	1,686
26. Helsingfors	1,861	30. Halle	1,666

The number of students in the Paris faculties was 11,010. Auditors are included in the number of students, which detracts from the value of the statistics. Thus there were 4,963 auditors at Naples, and only 77 matriculated students. At Berlin there were 4,807 auditors, but the number given above does not include students (2,632) in the Technical School, those (780) in the Agricultural School, nor those (398) in the Veterinary School. The order of the American universities and colleges having more than 1,000 students is: Harvard, Michigan, Pennsylvania, Yale, Minnesota, Columbia, California, Cornell, Chicago, Wisconsin, Nebraska, New York, Toronto, Boston, Wesleyan, Princeton, Stanford, Montreal.

THE south division of Hope College, at Brown University, was badly damaged by fire on the 4th inst. The total loss to the University, and to the students who occupied the building as a dormitory, was about six thousand dollars.

ON February 3d the Trustees of Columbia College adopted the following resolution: "That in all official publications hereafter issued by or under authority of the Trustees, all the departments of instruction and research maintained and managed by this corporation may, for convenience, be designated collectively as 'Columbia University,' and the School of Arts, as the same is now known and described, may hereafter be designated as 'Columbia College,' or 'The College.'" They also resolved that the new site of the University should be dedicated on May 2d, at which time the corner stone of three of the new buildings will be laid. Ex-Mayor Hewitt, class of '42, has been invited to deliver the oration.

Nature states that the Council of the Royal Geographical Society offer in the University of Cambridge for the present academical year a Studentship of £100, to be used in the geographical investigation (physical or historical) of some district approved by the Council. Candidates must be members of the University of not more than eight years' standing from matricula-

tion, who have attended the courses of lectures given in Cambridge by the University lecturer in geography. Applications should be addressed to the Vice-Chancellor not later than March 13, 1896.

DISCUSSION AND CORRESPONDENCE.

THE DECLINATION SYSTEMS OF BOSS AND AUWERS.

THE recent paper by Dr. Chandler on the declination systems of Boss and Auwers has been followed by another paper on the same subject by no less an authority than Prof. Newcomb. This paper appears in the *Astronomical Journal* of February 3d. Prof. Newcomb comes to the same conclusion as Dr. Chandler, namely, that the system of Auwers has now become so erroneous as to be quite unfitted for use as a standard. It is of course well known that Auwers' system is in need of revision; indeed we believe that such a revision is now in progress under the direction of the author himself. We cannot see, however, that Prof. Newcomb's paper throws any new light on the matter. As we pointed out in our notice of Dr. Chandler's paper, it is at present a matter of individual opinion how much weight should be attached to Bradley's observations. The vast majority of astronomers think that they are entitled to some weight in the formation of a system. Yet they receive no weight whatever in Boss' system which Dr. Chandler and Prof. Newcomb think should now be employed in place of Auwers'. Prof. Boss has not made public his opinion as to the weight due to Bradley's observations, so far as we know. That he attached no weight to Bessel's reduction of Bradley appears of course from his work on standard declinations, but whether he would do the same with Auwers' reduction of Bradley we do not know at present.

Coming now to the actual arguments advanced by Prof. Newcomb, we will first state very briefly what they are. Passing over those which appear to be of minor importance, we would call special attention to the results presented in Section III. of Prof. Newcomb's paper. Here are tabulated the corrections to Boss' declinations of twenty stars, divided into two groups of ten each, and each covering about

two degrees of declination. The corrections are given for the epoch 1755, when they depend on Auwers-Bradley; 1875, when they depend on Pulkowa; 1880, depending on Greenwich; 1885, on Pulkowa; and finally, 1890, depending on Greenwich. The corresponding corrections for 1847, which is the mean epoch of Boss' system, are taken as zero. From the fact that these corrections to Boss do not vary uniformly with the time, Prof. Newcomb draws the conclusion that Bradley's observations must be inconsistent with the truth, which seems to imply that they are to be accorded no weight in forming a normal system. Yet we may well ask whether the numbers given by Prof. Newcomb are accurate enough to furnish any information of reliability. In his zone A the correction to Boss for 1755 is $-2''.23$. But the ten numbers of which this is the mean have a range of no less than $4''.00$. So we can hardly escape the conviction that the whole conclusion may be vitiated by a large error in a particular star. That this has occurred is not altogether impossible. For zone B the corresponding mean is $0''.27$, with a range of $2''.30$ in the ten numbers whose mean has been taken. We cannot regard conclusions based upon evidence so discordant as final. It is to be noted also that only one of the twenty stars used by Prof. Newcomb is to be found in Boss' mean system. The other nineteen stars are among those taken by Prof. Boss from the catalogues which were not used in forming the mean system, but which were reduced to the mean system by the aid of systematic corrections. Indeed in all researches with Boss' system we are met at every step by the insuperable difficulty that his original mean system does not contain stars enough to get rid of casual errors in individual stars. While therefore we agree with Prof. Newcomb's final conclusion that the system of Auwers cannot be regarded as definitive, and that it requires revision, we wish to point out that the same is true of the Boss system. And finally we wish to repeat our former statement that it is not at present practically possible to employ the Boss system, because the reductions to that system for the recent accurate catalogues have not been published. This has been done with care for the Auwers system, and un-

til it has been done for the Boss system astronomers wishing to deduce for any purpose the most accurate declination of a star from all the catalogues will have to use the Auwers system.
H. J.

THE AGE OF THE PHILADELPHIA BRICK CLAY.

IN Prof. Salisbury's last excellent report on the Surface Geology of New Jersey some of the most important points are likely to be overlooked by reason of the different names applied to the same formation by successive investigators. Fully to appreciate the light which Prof. Salisbury's investigations shed upon some of the points recently under discussion, it is necessary, after the manner of the mathematicians, to substitute in one equation its equivalent in another.

What was formerly referred to as the 'Philadelphia Brick Clay' was later correlated with the 'Columbia.' This, however, is now properly described by Prof. Salisbury in the New Jersey report (from its place of greatest development in that State), under the name of 'Jamesburg,' of which he says there can be no doubt that it corresponds to the Columbia. This deposit as developed on the Pennsylvania side of the Delaware River, from Philadelphia to Trenton, was very carefully studied fifteen years ago by the late Prof. Carvill Lewis, his views regarding it being embodied in various papers published about that time and finally in the last chapter of Abbott's 'Primitive Industry' (pp. 524-527), published in 1881. His conclusions were "that this clay may be assigned to a period when the land stood 150 feet or more below its present level, and when the cold waters from the melting glacier bore ice rafts which dropped their boulders."

After going over much of this field with Prof. Lewis, I adopted these views and incorporated them into my various references to the subject. (See especially Proc. of the Boston Soc. of Nat. Hist., Jan. 19, 1881, p. 141; Ice Age in North America, p. 523, and later in Am. Jour. Sci., March, 1894, pp. 180, 181.) It is gratifying to see that Prof. Salisbury's studies upon the New Jersey side of the river lead him to substantially the same conclusions. First, in opposition to Mr. Upham, he now holds that (p. 126)