of London should acknowledge the labours of him who had most effectually contributed to this end.

Henderson's results seemed sufficiently convincing, but they depended upon determinations of the absolute place of α Centauri. The experiences of the skilful astronomer Brinkley at Dublin were still fresh in the minds of astronomers. He had arrived by similar though less perfect means at results like those of Henderson; but his results had been proved to be fallacious, though the causes of their being so still remain somewhat inexplicable. In the case of Struve's observations the weight of evidence which he produced and the excellence of his method were admitted, but men were not prepared by experience for accepting as accurate the minute changes of angle which Struve had to measure—nor, I am bound to admit, was the proof afforded by Struve's series of observations so entirely convincing as that afforded by the series of Bessel. Therefore to Bessel the well-earned medal was given, but the labours of Struve and Henderson received high and honourable mention. I quote from the speech of Sir John Herschel in awarding that medal. He says of Henderson's researches on α Centauri:—

"Should a different eye and a different circle continue to give the same result, we must of course acquiesce in the conclusion; and the distinct and entire merit of the *first* discovery of the parallax of *a* fixed star will rest indisputably with Mr. Henderson. At present, however, we should not be justified in anticipating a decision which time alone can stamp with the seal of absolute authority."

So much for Sir John Herschel's officially expressed opinion. I can state now, and as Henderson's successor I do so with pride and pleasure, that a different eye (that of his able and sympathetic successor, Sir Thomas Maclear) fully confirmed Henderson's result with another circle; and further, that Henderson's result has been still further confirmed by additional researches of which I shall presently speak.

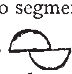
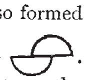
I must now pass over briefly the history of succeeding researches, and indeed it has been so admirably and so recently told within these walls by Dr. Ball that it is quite unnecessary I should enter upon it in detail. The most reliable values arrived at for the parallaxes of the stars of the northern hemisphere are given in the following table, and to these results I shall afterwards refer:—

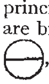
TABLE I.—*Parallaxes of Stars which have been determined in the Northern Heavens with considerable Accuracy*

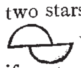
	Magnitude	Proper motion	Parallax
		"	"
61 Cygni	6	5·14	0·50
Lalande 21185 ...	7¼	4·75	0·50
α Tauri	1	0·19	0·52
34 Groombridge ...	8	2·81	0·29
Lalande 21258 ...	8½	4·40	0·26
O.Mg. 17415 ...	9	1·27	0·25
σ Draconis	—	1·87	0·25
α Lyræ	1	0·31	0·20
p Ophiuchi	4½	1·0	0·17
α Bootis...	1	2·43	0·13 ?
Groombridge 1830.	7	7·05	0·09
Bradley 3077 ...	6	2·09	0·07
85 Pegasi	6	1·38	0·05

The recent researches referred to in the title of this evening's lecture are some investigations which, in conjunction with a young American friend, Dr. Elkin, who was my guest for two years, I have recently carried out at the Cape of Good Hope.

The instrument employed was a heliometer—my own property—the good qualities of which I had previously tested at Mauritius in 1874 and at the Island of Ascension in 1877.

Now what is a heliometer? It is a telescope of which the object-glass is divided thus , and the two segments so formed can be moved with respect to each other, thus  and .

Here is a model which has been constructed to illustrate the principle of the instrument. You see that when the two segments are brought into what we may call their natural position, thus , that a heliometer differs in no way from an ordinary telescope—its divided lens produces a single image of a point of light, as will be evident from the image of the single artificial disk now on the screen. In optical language, the optical centres of the two segments are in coincidence, and so the images produced by each segment of the lens are in coincidence. But now, if the segments are separated, either segment produces a separate image of the artificial star, and the separation of the images is proportional to the separation of the segments.

Now, to illustrate how this instrument is used in observation, let there be two artificial stars—*a* and *b*. When the optical centres of the segments are in coincidence, we have on the screen—or in the field of view of the telescope—the images of these two stars. By separating the optical centres of the segments thus  we obtain double images of each of the stars *a* and *b*. Now if we turn the direction of the line of motion of the divided segments parallel to the direction of the stars *a* and *b*, and if we separate the lenses sufficiently we can make one of the images of the star *a* coincide with one of the images of star *b*. Similarly if we cross the segments we can bring the second image of star *b* into coincidence with the second image of star *a*, and if we have finely divided scales attached to the slides by which the segments are separated we can read off, in terms of these scales, the amount of this separation, and this separation is obviously twice the angle between the stars *a b*.

There is now upon the screen a photograph from a drawing illustrating the arrangements by which the segments of my heliometer are moved, and showing the scales by which the amount of the movement is measured; and these scales are read off by a powerful microscope from the eye end of the telescope, as in the photograph of the instrument now on the screen.

There is now on the screen a photograph of a drawing of the most perfect heliometer in the world, recently made by Messrs. Repsold of Hamburg for the Observatory of Yale College, New Haven, U.S. That instrument is now under the charge of my young friend, Dr. Elkin, of whom I have already spoken. If then we wish to observe the angle between two stars, it is only necessary to separate the segments of the object-glass by the required amount, to rotate the tube till the line of section of the object-glass is in the line joining the stars, to direct the axis of the telescope to a point in the heavens midway between the two stars under observation, and then we shall find in the field of view the two stars the angle between which we wish to measure. Then by slow and delicate changes in the distance of the optical centres of the segments, whilst the images of the stars are made to pass and repass through each other—thus—we are able to exactly adjust the angular distance of the segments to correspond truly with angular distance of the stars.

(*To be continued.*)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The Museums and Lecture-Rooms Syndicate have recommended the immediate erection of a new lecture-room for physiology, with large additions to the rooms for practical physiology and to the work-rooms adjoining the Comparative Anatomy Museum, at an estimated cost of 7500*l*. These are to be carried along Corn Exchange Street. A work-room for the large class of Elementary Biology is also recommended to be built as an additional story above the Museum of Mineralogy, at a cost of about 2500*l*. It is also recommended that 1000*l*. be laid out in the purchase of microscopes.

The Board of Biology and Geology have modified their report respecting demonstrators and lecturers in Animal Morphology, on learning that the General Board of Studies cannot support their former proposals owing to the financial state of the University. They now ask for a lecturer on Vertebrates at 100*l*. and one on Invertebrates at 50*l*., together with a demonstrator at 150*l*., to be appointed by the Senior Lecturer in Animal Morphology.

The Rev. J. Venn, of Gonville and Caius College, has been approved for the degree of D.Sc.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 15.—"Some Experiments on Metallic Reflection. No. V. On the Amount of Light Reflected by Metallic Surfaces. III." By Sir John Conroy, Bart., M.A. Communicated by Prof. G. G. Stokes, Sec.R.S.