Bradley's first recorded determination of an obliquity was in the winter of 1753; and he observed seven winter solstices, and as many summer ones, without interruption. Omitting the first determination, in order to have an odd number, and taking the thirteenth part of the sum of the remaining thirteen half-yearly determinations, we have an average obliquity corresponding to June 1757, viz. 23° 28′ 13″·4446.

Dr. Pearson commenced his solstitial observations in June 1828, and continued them till June 1838, thereby obtaining twenty-one successive half-yearly obliquities, the sum of which gives an average obliquity corresponding to June 1833. His result is 23° 27′ 39″·2409, and is therefore less than the average resulting from Bradley's determinations by 34″·2037. Dividing this difference by 76, the number of years between the two epochs (1757—1833), the annual diminution is found = —0″·4500. This accords very nearly with the annual diminution adopted by Bessel in the *Tabulæ Regiomontanæ*.

The instrument with which the observations were made, is an altitude and azimuth instrument, described circumstantially in Vol. II. Part I. of the *Memoirs*. Dr. Pearson describes the mode in which the instrument was used and its errors corrected, together with the methods followed in reducing the observations, and the elements employed in computing the corrections for parallax, refraction, nutation, and the sun's latitude; and concludes with a synopsis of the reduced observations, which were in number 1648, and a table of the mean obliquity on the 1st of January in each year, from 1750 to 1900, both inclusive, deduced from the above determination of the annual diminution.

II. On the Parallax of α *Centauri*. By Professor Henderson.

The two stars designated α^1 and α^2 *Centauri*, are situated within 19″ of space of each other. On comparing the observations of Lacaille with those of the present time, it has been found that, although the two stars have not sensibly changed their relative positions, each has an annual proper motion of 3·6 seconds of space. It thus appears that they form a binary system, having one of the greatest proper motions that have been observed; and from this circumstance, and the brightness of the stars, it is reasonable to suppose that their parallax may be sufficiently sensible to powerful instruments.

On reducing the declinations from his observations at the Cape of Good Hope, Mr. Henderson remarks, that a sensible parallax appeared, but he delayed communicating the result until it should be seen whether it was confirmed by the observations of Right Ascension made by Lieutenant Meadows, with the transit instrument. He now finds that these observations also indicate a sensible parallax.

It is to be observed, that the observations both of right ascension and of declination were not made for the purpose of ascertaining the parallax, but of determining the mean places of the stars with a proper degree of accuracy. Had the author been aware of the proper motion at an earlier period, a much greater number of observations, and of such as would have been better adapted for ascertaining the parallax, would have been made, and the result thereby rendered more secure.

The right ascensions and declinations of the two stars (which are always above the horizon of the Cape, and favourably placed for observation at all seasons), have been determined by comparisons with such of the principal, or standard stars, as were observed on the same day. It is consequently assumed that the latter have no sensible parallax. The mean places of the standard stars, or rather their relative positions, are also assumed to be known; and, in reducing the observations to the beginning of 1833, the coefficient of aberration has been assumed $= 20''\cdot5$, and that of lunar nutation $= 9''\cdot25$. Recent observations make the coefficient of aberration less; but a term is introduced into the equations of condition, by which the effect of a change in the aberration is immediately obtained.

For the determination of the parallaxes, three systems of equations of condition are formed for each star, namely, from the observations of right ascension, the direct observations of declination, and the reflected observations of declination. On resolving the equations by the method of least squares, and assuming the coefficient of aberration to be $20''\cdot36$, Mr. Henderson finds the following results:—

Parallax of α^1 *Centauri* =

$+0''\cdot92$; probable error $0''\cdot35$; from observations of right ascension.
$+1\ \cdot42$; probable error $0\ \cdot19$; from direct observations of declination.
$+1\ \cdot96$; probable error $0\ \cdot47$; from reflected observations of declination.

And $= +1''\cdot38$, with a probable error of $0''\cdot16$, by taking a mean of the three determinations according to their weights.

Parallax of α^2 *Centauri* =

$+0''\cdot48$; probable error $0''\cdot34$; from observations of right ascension.
$+1\ \cdot05$; probable error $0\ \cdot18$; from direct observations of declination.
$+1\ \cdot21$; probable error $0\ \cdot64$; from reflected observations of declination.

And $= +0''\cdot94$, with a probable error of $0''\cdot16$, by taking the mean according to their weights.

If we suppose that the two stars are at the same distance, then the parallax $= +1''\cdot16$, with a problem error of $0''\cdot11$. It therefore appears probable, that these stars have a sensible parallax of about one second of space.

Mr. Baily, the president, called the attention of the meeting to the recent accounts which had been received from America, relative to the late eclipse of the sun, which was annular in several parts of the United States. He alluded more especially to that remarkable phenomenon which he himself had observed in the annular eclipse