THE BRADLEY ABERRATION IN RELATION TO THE MICHELSON-MORLEY EXPERIMENT AND RELATIVITY

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The purpose of this paper is to prove in simple terms that the Bradley aberration of light from stars, first observed in 1727 at Oxford, England ¶, which is due to the velocity of the earth in orbit, is quite definitely not compatible, or able to coexist with the accepted transverse light paths of the Michelson-Morley experiment. It clearly defines the true nature of the transverse light paths.

Bradley, an astronomer, observed that stars appeared to move in orbits, which he discovered to be due to the earth's orbital velocity (3×10^6 cm/sec). This effect, which he named 'aberration of light', was quite distinct from another somewhat similar effect, known as 'parallax'. Parallax is an apparent displacement of nearby stars only, when viewed against the background of distant stars, from different positions of the earth's orbit.

These two effects, which appear together, may easily be distinguished, since the parallax displacement angle varies inversely with the star distance and is quite small. It is about one second of arc for the nearer stars and is 180 degrees out of phase with the earth's orbital position. The aberration angle, however, is not affected by star distance, being the same for nearby stars as for distant ones. #

¶. Editorial Comment: First credit for the astronomical observation of stellar aberration is given to the Frenchman, J. Picard, 1680, confirmed by R. Hooke, 1674, and J. Flamsteed, 1689. Bradley undertook a later investigation of the cause of it and in collaboration with his brother-in-law, Molyneux, they made accurate observations of the phenomenon. It was he, however, who proposed the explanation known now by his name. The pride of nations and the joy of an individual's own discovery sometimes causes both to forget to acknowledge the earlier sources to which rightful indebtednesses are the due.

Author's Response: We accept the Editor's historically interesting comments, but they do not modify Bradley's first and correct explanation of the aberration of light from stars. In similar vein it is said that Einstein was not aware of the Michelson-Morley results, null or otherwise, when he proposed his relativity postulate. However, Bradley was probably correct while Einstein was wrong.

#. Ed. Com.: But not for a street-lamp, which we recognize is only a closer source of light than the author's presumed star at 0.10 light-years.

Aut. Res.: Frank Nimrod's experimental results prove conclusively that even a street lamp will provide aberration effects exactly the same as light from stars. It is somewhat doubtful, however, whether the relatively large light beam from a street lamp would be an ideal light source from a scientific viewpoint for this precise, yet minute, measurement. In Nimrod's experiments accurate focussing and stopping of the beam was very necessary.

The aberration angle is due entirely to the velocity of the earth in orbit, v, in relation to the velocity of light, c, the aberration angle being equal to v/c, equal to $1x10^{-4}$ radians, or 20.64 seconds of arc, in a direction away from the perpendicular but in the same direction as the earth's orbital motion. This angle is only at its maximum when velocity v is at 90 degrees to the light from the star.

The effect of vector direction variation of the earth's orbital motion plus aberration results in the apparent star orbit or circle, displaced by 90 degrees leading in phase from the earth's orbit, when the star is viewed in a direction perpendicular to the earth's orbit.

It should be noted that neither of these effects, namely, parallax and aberration are real, in the sense that they are caused by any real movement of the star. They are apparent only, and the direction or angle of the light beam reaching the earth is not changed or affected in any way by the velocity of the earth. ¶ It only appears to be so changed in the case of aberration in order to keep the light in the center of the telescope and to prevent it from striking the side of the instrument due to the velocity of the earth through the vertical light rays. In the case of parallax, the position of the earth at various points in orbit subtends a real variable direction for light coming from the star, and thus gives the appearance of star movement against the fixed star background.

Consideration will now be given to the apparent effect on both aberration and parallax when the distance of the star is theoretically varied from 100 light-years down to 0.10 light-years distance from earth, when viewed in a direction perpendicular to the plane made by the earth's orbit. Let the Bradley aberrational angle be termed α_B and the parallax angle α_p.

Then at 100 light-years, $\alpha_B = 1x10^{-4}$ radians; $\alpha_p = 1.58x10^{-7}$ radians.

10 $1.58x10^{-6}$

1 $1.58x10^{-5}$

0.10 $1.58x10^{-4}$

It should be noted that the aberration angle α_B remains constant at $1x10^{-4}$ radians, regardless of distance, while the parallax angle would be increased from $1.58x10^{-7}$ radians at 100 light-years, to $1.58x10^{-4}$ radians at 0.10 light-years. This latter distance is not astronomically achievable as the nearest star is distant four light-years.

It is important to note that the apparent circular orbit of the star due to aberration rotates in the same direction as the earth's orbit, but leads it by 90 degrees angular displacement. If the earth's orbital direction were reversed, then the star's apparent aberrational orbit would also reverse, and be displaced by 90 degrees in phase in this reverse direction.

It will be appreciated, now, that, but for the earth's velocity of 30 km/sec in orbit, there would be no aberration, and α_B put equal to v/c, would imply that it is zero. If we could, therefore, theoretically interchange the position and

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¶. Ed. Com.: It has been, by now, quite well proven that the aberrational bending of a light ray is both real and physical: on a theoretical basis, by J. Durie and C. Zapffe, and on an observational basis by the Barwise experiment. C.f. this Journal, pp. 375-86, pp. 1162-92, p. 2623.

Aut. Res.: The absolute theory reveals that light rays are transmitted via the gravitational field which is defined in detail. Light rays do not bend due to the relative movement of the Earth through this gravity field, but only appear to do so, i.e., the so called bending is apparent only and not real. The author would welcome information re. the Barwise experiment, also the relevant copies of this **Journal**, if possible. Ed. Res.: The report of the Barwise experiment was in the preceding issue of this J., apparently not in the author's hands at time of his writing. The debate on aberration has run through almost every issue of this publication during the four years of its existence and the references the author requests are far too numerous to be given here in full detail. He should consult the back issues generally.

velocities of the star and the earth, so that the earth is stationary, while the star orbits the sun, at the earth's original velocity, 30 km/sec, and we were then to observe the star from the stationary earth, i.e. v = 0, there would be no aberrational angle since αβ equal to v/c would be zero. § However, the star's orbital position will cause a parallax angle at the stationary earth, the magnitude of which will vary inversely as the distance.

It should also be clear that this parallax angle now provides and defines the real orbit of the star, but the true position will be lagging by one year for a star which is one light-year distant. Since the orbit is also one year we will see its true position, even though the light has taken one year to reach us.

Let us now call into being, with our imagination, again, an even more physically impossible concept, which, nevertheless, has the valuable compensation of being instructive. Since we now have the star rotating around our sun, let the earth, at one light-year distance, also rotate in orbital phase with the star in a plane parallel to the star's orbit and at the same velocity of 30 km/sec.

It should be possible to see that the aberration angle as measured from the earth will once again be equal to v/c, equal to 20.6 seconds of arc. This aberration angle of the earth's telescope is again displaced from true perpendicular in the same direction as the earth's velocity v. This aberration angle is quite unaffected by the velocity of the star in orbit. In fact, if this star velocity were doubled, or increased to any higher velocity, either in the forward or reverse orbit direction, then, also, the aberration angle as seen from the earth viewpoint will be completely unchanged. However, if the earth velocity is increased to v', then so also is the aberration angle increased to v'/c radians.

Now let us consider the aberration angle of a telescope fixed on the star, in concept only, of course, with both star and earth still rotating at velocity v around the sun in parallel orbital planes, which is possible only in concept, as well. Then the aberrational angle at the star will be the same as from the earth, and will be equal to v/c away from the perpendicular **toward** the star's and the earth's orbital motion. It should be noted, however, that this aberrational angle as viewed from the star is not parallel with the aberrational angle as viewed from the earth, which is still moving at velocity v in its parallel orbit. These two different aberration vectors if extended would make an angle of 2v/c where they cross each other. Again attention is drawn to the basic given theoretical datum and fact that the light rays from both the star and the earth, which are both light sources for our purposes, fall perpendicularly on both earth and star respectively. It is only the relative velocity of the telescope to the velocity of light that necessitates the different aberrational vector tilt of the angle v/c from the perpendicular. The angle of tilt represents the velocity of light vector relative to the telescope vector velocity v, and is not absolute.

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§. Ed. Com.: The author has here struck upon some more of the difficulties that are associated with assuming the complete reciprocity of inertial coordinate frames which relativity advocates as true.

Aut. Res.: If the Editor will allow difference without offence, our argument has nothing to do with coordinate frames of reference, either inertial, relativistic or otherwise. The alleged difficulties referred to are his, not ours, but if such frames are necessary may it be suggested that the Galilean frame be reinstated as relativity has so obviously been disproved by many others apart from the author. Ed. Res.: No offense is taken and none was intended to be given, though we realize that questions raised concerning an author's statements and their truth may be galling to them. This **Journal** functions as an open forum for discussion and debate of all issues under consideration in its pages, in this case the matter of the validity of Bradley's explanation of aberration. Only by free and open scholarly discussion of all sides of a question can truth be ultimately arrived at for no one mind is capable of complete understanding. Authors are invited, indeed required, to respond to any and all challenges made to their statements, theories and ideas. We regret that the author should feel in any way restrained in making such responses (except if exceeding the standard rules involved in scholarly debate, of which he is certainly not guilty here).

Incidentally, the Galilean group is not composed of a single, individual frame, as the author seems to believe, but of a whole class of frames and aberration is involved in any change of coordinates between them.

We note, therefore, that when, and only when, the light vector is towards the observer and telescope, that the end of the telescope that is furthest from the observer is tilted toward the velocity vector direction, whether on star or earth, and that a tilt in the reverse direction, away from this velocity is quite incorrect and incompatible with the Bradley aberration. ¶

Using our now intrepid imagination again, we now take another step and consider the effect of bringing the earth back again toward the star and toward its original orbit around the sun by gradual increments. Let us consider the corresponding aberration angles at the distance of 0.1, 0.01 and 0.001 light-years between earth and star. Both earth and star are still at orbital velocity v and are in phase with each other. It should now be obvious that since the earth's velocity v will remain unchanged although the distance between earth and star varies from 0.10 to 0.001 light-years, then the respective aberration angles will also remain unchanged and equal to v/c, regardless of the above distance change. However, the parallax angles will increase inversely with the reduction of distance, but these parallax angles need not concern us further as it is the aberration angles that will provide the information that we seek.

We now take the final step and bring the earth back to its original orbit around the sun, but displaced from the star by only 11 meters apart. They are still rotating in phase at the same velocity v in synchronism. It should now be possible to see at once, that this latter exercise has, once again, made no difference to the Bradley aberational angle α_B in both the case of the earth or the star, which both subtend equal aberration angles, both being tilted again toward the velocity vector of the orbit direction in each case *. It should be obvious that very special imaginative steps have been taken to obtain a small perpendicular beam of light only from both the earth and star with each telescope on separate occasions being adjusted so that the beam falls in the center of the viewing crosswires. The next step will, the author trusts, not make any difficulty in the above thought experiment and will be patently clear.

It only remains, now, to remove the star back to its original place in the firmament as it has now served its useful purpose, and replace it at 11 meters distance by a fixed light source beamed perpendicularly to the earth orbit velocity vector. Two such beams, exactly 180 degrees apart vectorially, can now exactly and in reality replace the previous thought experiment that used both earth and star light

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¶. Ed. Com.: The author needs to be aware that lunar aberration is negative and equal to -0.703" in accordance with the Bradley aberration, although on detailed analysis it appears this is due to the method of measurement of the angle against the background of the fixed stars, rather than with reference to the source.

Aut. Res.: The Editor's lunar reference is hardly applicable and merely confuses the real issue, as both Earth and Moon are in relative and continually varying motion, and this is thus not comapriable with the fixed star datum.

*. Ed. Com.: The author here is faced with the contradiction which the street-lamp example provides; for the street-lamp does not exhibit Bradley aberration, though Bradley's explanation demands that it should. Consequently, having based his arguments on the acceptance of the Bradley explanation and now, if his reasoning be correct, arrived at a contradiction, he has actually destroyed the Bradley explanation and proven it flawed. The Bradley explanation has been so proven already in many other ways in the pages of this J. Let him, then, not take off on proving some new consequence basing his discussions on a flawed premise.

Aut. Res.: The Editor appears to be fond of the street lamp example used by Baden Powell. As this does not seem to be supported by any experimental or scientific evidence, the author begs leave to differ once again and to explain that since Nimrod has now proven that all light beams are subject to the Bradley aberration, which should be recognized as a natural law, then it can be seen that street lamps should not be an exception to the rule. Hence, there is no proven flawed premise and no contradiction.

sources. It can also be seen that the Bradley aberrational angle remains unchanged in each case. The apparent aberration depends on the earth's velocity v and the perpendicular velocity of light, c, only, and no other factor. If we observe the light beam through a telescope, then, the furthermost end of the telescope that is away from the observer, will be tilted towards the velocity vector and not away from it. This means that the light itself still travels perpendicularly to the orbital velocity but the telescope has to be tilted forward to ensure the central arrival of the beam in the crosswire as the telescope moves forward in orbit. In fact, the light beam remains exactly central in the telescope while the latter moves at velocity v, until the beam reaches the viewing eyepiece.

In the light of the foregoing clear-cut and, moreover, established laws, defining Bradley aberrational effect, we are now in a strong logical and established scientific position to examine, not only the transverse light paths of the historical Michelson-Morley experiment, but also to prove conclusively why these light paths were, and still are, invalid and to define their true paths. In fact, it is considered that the foregoing detailed, yet simple #, treatment will have shown that the Bradley aberration is a 'mirage' and unreal if it leads us to consider that the perpendicular light beams under observation are effected in any way in an absolute sense by either the velocity of the light source v, or the velocity of the receiving telescope v. In the 'thought experiment' the light beam emitted from the orbiting star will still fall perpendicularly onto the earth through the telescope, tilted to receive it centrally and correctly one year after leaving the star, during which time both star and earth will have made exactly one complete orbit. So that, should we need to, we could calculate the Bradley aberration by dividing the total orbital length, namely, vt, by the distance between the star and earth, namely, ct, i.e., $vt/ct = v/c$, where time t equals one year. It is quite clear in this case that the perpendicular beam falls directly via the perpendicular distance ct equal to one light-year, and does not travel via the relative aberration hypotenuse the length of which is $(c^2 + v^2)^{\frac{1}{2}}t$.

In other words, while the light beam emitted perpendicularly towards the earth travels at its absolute and invariant velocity c and its perpendicular vector direction through space, the earth also has travelled on at its own orbital velocity v always at right-angles to the beam. This effect, which provides the Bradley aberration angle of v/c, does not need a star, displaced by light years, as this very special relation or ratio of velocity v to velocity c, namely v/c, can still be accurately measured over 11 meters, or any other convenient distance on earth, as in the M-M experiment.

If we now regard the 45° mirror, M_0, of the M-M interferometer as the star ¶, projecting its light rays perpendicularly toward the transverse mirror, M_t, [1] it

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#. Ed. Com.: We trust the reader has found it so.

¶. Ed. Com.: The author here seems to be treating a reflecting surface as entirely equivalent to a primary light source. This is questionable and in need of demonstration. Consider the example of the Moon. She shines by reflected light from the Sun. Suppose her surface were smooth and polished like a mirror. Then there are apparently two forms of light that come to us by reflection. In case (i), there is a bright spot of limited area of relection of the Sun's own disk, the rays involved in which coming from the Sun subtend equal angles to the normal to the lunar surface with the same rays reflected to the earthbound observer's eye. Then there will be (ii): the rays from the visible image of the Moon similar to those that come to us regularly and display the landscape and features of the unpolished surface; these make the image of the entire lunar disk visible. Now, we note that as the Moon moves, the total subtended angle in case (i) doubles in increment; while in case (ii) we question if this occurs. This is unanswered by science, to the best of our knowledge, as is the question as to how this relates to the aberrational effect in the two alternative instances, for aberration is directly related to how the moving receiver crosses the rays emanating from the primary source; we see, in case (i) that those rays are themselves in lateral motion due to the movement of the mirror.

Aut. Res.: The moon is spheroidal and not flat and whether polished or not would not provide the relative required lateral motion of light beams. In any case his argument is hardly an example of scientific clarity or without ambiguity.

will now be clearly appreciated that if we point a small telescope, with the aid of our imagination, again, from mirror M_t as a base, it will have to be tilted at the aberration angle α_B equal to v/c, with its end that is remote from the eyepiece tilted from the perpendicular towards the velocity vector of the earth's orbit. Then as the light beam from the 45° mirror M_0 moves perpendicularly at velocity c, the telescope at mirror M_t also moves at velocity v of the earth at right-angles to the light beam. However, due to the Bradley aberration tilt angle, α_B = v/c, the perpendicular light beam stays exactly and continuously in the central axis of the telescope, regardless of the actual telescope length, as it moves forward at velocity v, until it reaches the center of the eyepiece.

Now we have, at last, a clear and exact conception of the real, true, and yet, somewhat profound significance of Bradley's discovery, even though it is possible that Bradley himself may not, 250 years ago, have fully appreciated its profundity and hence its significance for science in general. If we wish to view the light beam emitted by the 45° mirror M_0 by means of a telescope at transverse mirror M_0, but with the special condition that this telescope is to be equal in length to the hypoteneuse of the Bradley aberrational triangle formed as follows: let the perpendicular distance between mirror M_0 and M_t be 11 meters, as in the preceding paragraph, then let the telescope length be such that when tilted at the Bradley aberrational angle α_B its end that is away from the viewing eyepiece is in exact correspondence with the light beam being emitted from mirror M_0; then it can be seen that the viewing end of the telescope at mirror M_t must perforce be displaced from the true perpendicular by a distance of 1100 $\tan\alpha_B$ equal to 1100α_B centimeters, equal to 0.11 cm, in a direction directly away from the earth's velocity in orbit. This light beam will thus stay in the center of the telescope as the latter moves also at velocity v, and will be observed at the eyepiece as and when this eyepiece at M_t coincides with the perpendicular arrival of the light beam.

The angle α_B of the telescope to the perpendicular defines the velocity of the light beam relative to the telescope velocity. It must be remarked at this point that the Bradley aberrational angle is displaced on the other side of the perpendicular to the angle of the light beam that has been accepted generally for the M-M transverse light paths for nearly 100 years. It can, therefore, now be clearly seen that the angle of the transverse light beam from mirror M_0 to M_t, that has been accepted as correct for the M-M experiment, is quite incorrect, for the path of a truly oriented light beam in the perpendicular direction. It will now be obvious that only a truly perpendicularly oriented light beam can measure the aether drift. The traditionally accepted transverse light beam can only exist if the mirror M_0 (or M_t or both) are tilted incorrectly at an angle to achieve such a non-perpendicular light path, since this path is tilted forward in the same direction as the earth's velocity, v, whereas a truly perpendicularly oriented light beam would be 'deflected' backward away from the earth's velocity v, relatively to the mirror M_t, and in accordance with the Bradley aberration laws that have been defined in the foregoing. If, in fact, the transverse light path relative to the mirrors is real then the absolute set-up of the beam would need a further deflection angle of v/c radians in the same forward direction, because, due to the Bradley effect the light beam would then be 'deflected' by this same angle v/c back to the generally accepted tilt position of v/c radians forward from the absolute perpendicular. It is obvious that no consideration has yet been given to the true absolute paths taken by both light beams when the orientation of the mirrors is considered relative to the earth's velocity. There is certainly nothing to prevent the transverse light beam following the generally accepted paths, if the mirror M_0 is adjusted accordingly away from the correct 45° angle. This was the crux of the M-M error in setting up the experiment. At that time it was tacitly assumed that both transverse and in-line mirrors and light beams could be set up accurately, and that their go-return paths could be made parallel independently of their vector orientation with respect to the earth's velocity v. This is not so, and the Bradley aberration shows

this is so, as explained above. Accurate paralleling of both the go-return light beams can only be achieved when both are paralleled independently in the in-line vector direction of the earth's absolute velocity, as distinct from its orbital velocity. Again the author's M-M paper applies. The important reason for this precaution is that in this direction, only, is there no aberrational effect, and, hence, a true and correct paralleling can be established. Then when the transverse arm is returned to the perpendicular position, whether this is with respect to the orbit or the galactic velocity, then a true displacement of the light beam will occur, as the reflected light beam will be truly perpendicular in the absolute sense. The effect of the mirror movement will be made apparent as the real aether drift, by a considerable and measurable light beam displacement on mirror M_0. This in turn and in conjunction with the length of the light path, which is known, and the recognised and established absolute velocity of light c, may be used to readily provide the absolute velocity of the earth in any direction that is required.

The measurement of the absolute velocity of the earth using the above principles has been achieved many times over a long period since the middle 1950's by Professor Nimrod of California [2]. Since the main principle and premise, which came directly from the incorrect null results of the Michelson-Morley experiment, of Einstein's special relativity, was that the absolute velocity of the earth and of everything else in the universe, except that of light itself, can never be measured by any method because of its essential relative nature, it is obvious that both the Michelson-Morley null results were invalid and misleading, and that consequently, the theory of relativity itself has also been shown to be quite invalid §. Both of these facts have been dealt with elsewhere in the author's books and papers and therefore will receive no further treatment here, apart from remarking that Einstein's general relativity theory is also invalidated since it also rests on the same incorrect premise as above, and that accelerations, as distinct from uniform velocities, fail to justify it when the basic premise is wrong.

To make a final point, the experiment outlined two paragraphs above, has in fact, already been observed and confirmed on an astronomical scale, but it is considered reasonable to assume that the astronomers concerned did not then fully realise the deeper significance of their measurements. It is a well known astronomical fact that when a star is observed on the horizon or just above it, that the Bradley aberration takes the form of a straight line parallel with the horizon. This line is quite limited in length and subtends the total aberrational angle of 2v/c at the telescope for one complete orbit, due to the fact that the aberration is confined to one plane only, the earth's orbital plane. It should now be obvious that a maximum aberrational angle, v/c, will occur at two points only in the earth's orbit, namely, the nearest point and also the furthest point from the star. At these two points the light from the star falls perpendicularly on the telescope, which is moving at velocity v, at right-angles to the light, hence, the ratio v/c will appear as the tangent of the

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§. Comment by Toth: The author's argument would here appear to be a paralogism: If Prop A is false, then Prop B is false. Since Prop B is false, therefore Prop A was false.

Aut. Res.: Einstein's relativity postulate is said to be purely hypothetical by some scientists and not based on any experiment, Michelson-Morley or otherwise. Whereas, it should have been so based solidly on experimental evidence that the Earth's velocity could not be measured and had no measurable effect on light rays from stars or light beams on Earth. Nimrod disproved this experimentally (Prop. A) and, therefore, Einstein's hypothetical relativity postulate (Prop. B) was proven false. For the Editor's information this argument is not reversible, i.e., Prop. B does depend entirely on Prop. A, (the experimental fact that the Earth's velocity cannot be measured relative to light beams) and Prop. B cannot be disproved in any other way, either experimentally or theoretically. Hence no paralogism is involved.

aberrational angle. At the most distant point in the orbit, as the earth's vector velocity v has changed through 180°, so also has the aberrational angle v/c moved through 180°. This provides the total aberrational angle 2v/c for the complete orbit. However, at the two midpoints in the orbit between these two extremes, where the earth's velocity v is in line, towards or away from the light vector, c, from the star, then velocity v will not subtend an aberrational angle with velocity c, but is still there and is in line with velocity c, being either equal to c + v or c - v, that is, either positive or negative. Attention is drawn to the important significance of this astronomical fact, which, as far as the author knows, still remains unrecognised even after several hundred years. The significance lies in the undoubted and indisputable fact that this observation of stars on the horizon provides a measurement of the much sought-after 'aether-drift' due to the movement of the earth through this energy field, aether, that carries the light rays, and, of course, all other radiations. It has been proven that this field of energy is none other than the most elusive gravitational field itself, together with a detailed definition of the nature and structure of this field. If we consider the tilt of a long telescope at the two points of maximum aberration in the earth's orbit, which may be considered to have opposite polarities as their aberrational angles fall on opposite sides of the perpendicular from earth to star, then the aether-drift can be measured by the length of the telescope and the aberrational angle. Let this length be L_t cm from the tip of the telescope to the eyepiece, then the perpendicular distance travelled by the light from the tip to the eyepiece will be equal to

$$L_p = L_t \cos\alpha_\beta$$

The horizontal distance moved through by the eyepiece during the time taken for the perpendicular light beam to fall through the distance L_p will be equal to,

$$L_h = L_t \sin\alpha_\beta$$

The perpendicular light beam from the star on the horizon will have travelled the distance L_p in exactly the same time that the eyepiece has travelled the distance L_h at velocity v. It can therefore be seen that we obtain the earth's velocity from the relations:

$$\frac{L_h}{L_p} = \frac{L_t \sin\alpha_\beta}{L_t \cos\alpha_\beta} = \tan\alpha_\beta \qquad \frac{v.t}{c.t} = \frac{v}{c}$$

Therefore, the earth's velocity

$$v = c\tan\alpha_\beta = c\alpha_\beta = c\frac{L_h}{L_p}$$

That the earth's velocity does vary relative to the light from the star is clearly indicated by the disappearance of the aberration at the two midpoints between the two points of maximum aberration, as mentioned above. There is no doubt that given sufficient instrumental accuracy that a Doppler effect could be perceived at these points corresponding to the velocities (c + v) and (c - v). This Doppler effect would be more apparent in a northerly direction corresponding to the larger galactic velocity of the earth. In this case care would be necessary in choosing a suitable star or other galaxy that was not also moving at the same velocity. However, as it has been clearly proved in the foregoing, the earth's absolute velocity can be measured without recourse to the light from stars. It has been shown that the Bradley aberration proves that the absolute velocity and vector orientation of any light beam is not affected in any way by the velocity of the source of light. What is affected is the relative orientation of absolute light beam to the absolute velocity of light known and recognised, therefore the absolute velocity of the source may be readily ascertained.

Conclusion.

It is considered that this simple treatment of the Bradley aberration clearly shows that the reasons given in the author's paper [3] for the failure of this historical experiment together with the correct method for setting up this experiment are perfectly correct and justified on scientific and logical grounds. The absolute theory was instrumental in revealing that the usually accepted modification of Bradley's original equation, namely, $v/c = \tan\alpha$, by relativity into the equation $v/c = \sin\alpha$, was incorrect because the light beam does not travel along the Bradley hypotenuse at velocity c, but always along the perpendicular path. In fact, Bradley was right and Einstein was wrong, and, although this difference is minute, the true recognition is vital to science, as it represents the gateway to knowledge of the absolute nature of the whole universe.

Bibliography

[1] Hobson, Victor G.: Title unknown; an unpublished manuscript apparently, probably available from its author.
[2] Nimrod, F.: Title unknown, source unspecified.
[3] Hobson, Victor G.: **Further Light on the Michelson-Morley Experiment,** unpublished manuscript distinct from [1] which seems to be a carry-on of [1].

Editorial Footnote: The **Journal** is embarrassed by this author's bibliography. The author was requested to supply these references at proof time but has refused to accord so much courtesy. Normally, the paper would have been withheld from publication on this account despite the four days of time invested in the preparation of the copy. However, it represents the last cry from the advocates of Bradley's theory and is therefore especially important to the debate relating to the theory of aberration that has been going on in these pages.