EN Tech. J., vol. 2, 1986, pp. 157–167

The Suspect "Proof" of Relativity

MALCOLM BOWDEN

Not unlike the theory of evolution, Einstein's relativity theory has generally been accepted by the scientific establishment as a "fact". Certain experiments have been carried out and these are claimed to support the theory fairly convincingly. My attention has recently been drawn to a book published in 1922 that was very critical of the evidence that was said to support Einstein's relativity theory. Having obtained a copy, it made very interesting reading, for the serious charges made by the writer have never, as far as I know, been answered.

The assertion that the evidence "proves" relativity has received the support of the experts and there the matter rests. This acceptance by scientists at a high level has resulted in the very rapid transference of this teaching into the curricula of our colleges and universities where it is regarded as a proven fact. Yet it is well known that many physicists do not accept it. Recently there have been several creationists critical of Einstein's theory, such as Lee's "triplets paradox" discussion in the Creation Research Quarterly[1] and Slusher and Ramirez's monograph on the perihelion of Mercury published by the Institute for Creation Research.[2]

Undoubtedly, we are all well aware that the fact of acceptance by the academic world of a scientific "truth" does not necessarily mean that it can withstand critical examination. It was not until I read this book in question, and one other, that the subject began to look remarkably like a re-run of the rise of evolution.

I therefore believe that the following summary of this book's contents may well stir up others more competent to deal with such a technical subject as relativity to consult library copies of the book and undertake further investigations. However, a grasp of the criticisms of the theory requires no more than a very modest degree of common sense and scientific understanding.

The book in question is by Professor Charles Lane Poor and is entitled "Gravitation and Relativity"[3]. Poor was well qualified to comment upon the theory of relativity, particularly the astronomical material which forms the bulk of the so-called evidence, for he was Professor of Celestial Mechanics at Columbia University. I will summarise the book on the main subjects as Poor deals with them.

FIZEAU'S EXPERIMENT

In 1859 Fizeau found that the speed of a beam of light which was passed through a stream of water was affected by the speed of the water and that this effect could be explained by classical physics. However, the effect can equally be well explained by the theory of relativity. By making approximations and discarding certain small terms as negligible, Einstein was able to show that it was in accord with his theory. However, he did not stop there. Lorenz had shown many years before that the effect was perfectly explicable by the classical laws. Nevertheless, Einstein boldly claimed that this

". . .**does not in the least diminish the conclusiveness of the experiment as a crucial test in favour of the theory of relativity"** and that relativity had been developed from the hypothesis of electrodynamics.

Poor's comment upon this statement is pungent.

"**These** ***two sentences of Einstein are, from*** **one** ***point of view, as important as any in his work on relativity:– they should be read and re-read. They give a direct insight into his methods of reasoning. Here is*** **an** ***experiment claimed by Einstein as a 'crucial test' of his theories, yet in the very sentence, in which this claim is advanced, he admits that other theories, the very theories he attempts to overthrow, can equally well explain the phenomenon. How can*** **an experiment,** ***equally well explained by several different theories, be a 'crucial test' in favour of one of them?"***

SPECTRAL LINE SHIFT

There is a very small shift of the spectral lines

from a distant star predicted by Einstein's theory. It was at the limits of detectability in 1922, for as is well known, a shift is also generated if the star is moving towards or away from the Earth. Different experimenters have tried to detect this small degree of shift due to relativity but results have varied. Einstein, however, claimed that the results of Grebe and Bachem **"placed the existence of the effect almost beyond doubt"** but admits that those of St. John **"have led to the opposite opinion."**

Thus Einstein emphasises the result of the first two experimenters, but Poor points out that these were obtained on an ordinary instrument available in a small laboratory or observatory. St. John's results, however, were carried out at the Mount Wilson Solar Observatory on equipment far surpassing anything to be found elsewhere.

THE PERIHELION MOTION OF MERCURY

As the planet Mercury circles the Sun on an elliptical path, the axis of the ellipse rotates in space very slowly, so that the path is slightly different each orbit. When all the known causes have been allowed for, there still remains a progression of the ellipse of + 43 seconds of arc per century. The cause of this movement has not been determined completely, and Einstein claimed that his theory solved this problem **"against which classical mechanics is powerless."**

Poor gives long explanation of the problems involved in predicting the positions of planets, for they are affected by each other in a phenomenally complex way. Calculations were extensive even when certain assumptions were made, and the records of the computations occupied many volumes. These assumptions include such aspects as the Sun and planets being perfect spheres, and that meteorites and asteroids are ignored.

Einstein quotes this figure of 43", claiming that **"it does not differ sensibly"** from the observed figures of Leverrier (1859) and Newcombe (1882). But Newcombe's final result (1895) was 41.6". The average of Leverrier (38") and Newcombe is 8% different to Einstein's. Furthermore, if a calculated value for the oblateness of the Sun is allowed for, the difference becomes 16%. Thus Einstein's calculated value does not precisely agree with the observed value.

Einstein quotes only the perihelion of Mercury as completely justifying his theory, and dismisses all other anomalies as being "unverified" or too small to be determined with any certainty. This is quite incorrect. When Newcombe was checking Leverrier's calculations, he noted several other anomalies in planetary orbits that he could not account for. Poor gives a table of the measured discordancies compared to those predicted by Einstein's formula, which only affects the perihelion of the orbits (see Table 1).

When all discordancies of the planets are considered, it can be seen that except for the perihelion of Mercury, relativity fails completely to explain the others listed in Table 1. Einstein had no right to dismiss these as insignificant, for they are well within the accuracy of astronomical calculations and observations. He appears to have selected the largest of the discrepancies and shown that his formula fully explained it, claiming this one value as proof of his theory.

Poor comments -

"It is ***hard to see upon what scientific grounds it is allowable to select one result of a scientific research and to dismiss all the others as negligible, why one figure is to be taken as absolutely accurate and all other figures thrown out as worthless.***" (p. 194)

There are other factors that could explain a large part of these discrepancies. Leverrier suggested that there was a ring of asteroids between Mercury and the Sun. Newcombe wondered whether there may have been a number of planetoids between Mercury and Venus. The problem was that to produce the measured amount, they would have to be at an angle of 7.5 degrees to the plane of rotation of the earth around the Sun (the ecliptic), and it would make added complications.

Poor finally lists four possible explanations:–

(1) The Sun is not spherical.
(2) A ring of matter between Mercury and the Sun.
(3) A group of planetoids outside the orbit of Mercury.
(4) Hall's hypothesis (a very small correction to the effect of gravity).

THE CURVATURE OF LIGHT RAYS

Einstein also predicted that the light from a star that grazed the surface of the Sun would be deflected 1.75 seconds of arc due to the pull of gravity. In order to check this, two expeditions were mounted, one to Sobral in Brazil and the other to the island of Principe off the west coast of Africa. These were to coincide with a total eclipse that took place on May 29th, 1919. The results of the expeditions were reported in the Memoirs of the Royal Astronomical Society, vol. 62, in 1923.[4]

Table 1. Comparison of Measured Discordancies and Those Predicted by Einstein's Formula (after Poor, 1922). (Figures are in seconds of arc per century).

Planet	Discordance	Einstein	Difference
Perihelia —			
Mercury	+ 41.6	+ 42.9	- 1.3
Venus	- 7.3	+ 8.6	- 15.9
Earth	+ 5.9	+ 3.8	+ 2.1
Mars	+ 8.1	+ 1.3	+ 6.8
Nodes —			
Mercury	+ 5.1	0	+ 5.1
Venus	+ 10.2	0	+ 10.2
Eccentricity —			
Mercury	.88	0	.88

The results were varying, but it was claimed that they nevertheless showed that the expected deflection did take place and that therefore Einstein's theory was once again confirmed by experimental results. Poor, however, subjected the results to a severe criticism that shows they were really quite unreliable and did not support the theory in any convincing way.

(1) The Apparatus

At both sites each telescope was mounted horizontally and the light from the Sun and stars was reflected into it by a mirror mounted at an angle on a base. The mirror was turned slowly by clockwork so that the image in the telescope was stationary. The mirror added a further degree of uncertainty into the whole process of measuring incredibly small angles of movement.

(2) Refraction

One of the major correction factors is that correction for the refraction of the stars as they travel through the varying densities of the air. This factor had to be calculated and the final correction was over 100 times greater than the movement that should have been generated by the gravity of the Sun, whilst the differential refraction between the stars was still several times the full expected light deflection.

The different deflections between the stars were measured by means of taking a photograph of the sky at night and then comparing it closely with that obtained during the eclipse. In this way any relative movement could be measured more accurately. However, it is obvious that the conditions of refraction are quite different at night to those of the heat of the day. Furthermore, when the eclipse is passing over the Earth's surface, the shadow cools a funnel of air which would completely alter the refraction of the air at that time, affecting both the altitude and the azimuth. Thus, the corrections made on certain general assumptions would not hold for eclipse conditions. It is possibly this factor more than any other that produced so many results of the measurements of the stars that were "discordant" and rejected.

The eclipse took place in May, but the comparison plates were taken fifty days later at Sobral when the stars were approximately in the same position and the air temperature was about the same. Between these two dates the mirror was dismantled to avoid the heat. At Principe, conditions were quite different. The comparison plates were taken at Oxford (England) in January and February under quite different conditions of temperature and pressure. Therefore these results are even more unreliable, for the whole equipment had to be dismantled and re-erected several thousand miles away for the actual eclipse.

(3) Sobral

This expedition was led by Dr A.C. Crommelin and Mr C. Davidson.

Two telescopes were used at this location — one with a 13-inch diameter lens, and a 4-inch telescope of 19-foot focus. Due to defects in the mirror, the 13-inch lens was stopped down to 8 inches. Conditions were good at the time of the eclipse, but a thin film of cloud passed over the Sun during the middle part of the period when the darkness was total. On the large telescope, nineteen plates were taken and seven stars appeared on sixteen of them. On the small telescope, eight plates were taken and these seven stars appeared on seven of them.

When the plates from the large telescope were developed, it was found that there had been a serious change of the focal length, which resulted in the images being too diffuse to be of any value, and so they were virtually ignored. The reason was attributed to the effect of the Sun upon the 16-inch mirror used to deflect the Sun's rays into the telescope. Thus all the Sobral results were from the much smaller 4-inch telescope.

(4) Principe

This expedition was led by Prof. A.S. Eddington and Mr E.T. Cottingham.

At the suggestion of Mr Davidson, the 13-inch telescope was stopped down to 8 inches to improve the images of the stars. On the day of the eclipse, cloud covered the Sun for much of the time. Sixteen plates were made during the eclipse, but only seven had star images clearly recorded. Three stars used for the "light deflection" measurements appeared on only four plates, while one of the stars had images that were diffuse and faint on two plates. Thus only two plates could be considered good exposures of all three stars, and these were all taken under poor conditions.

(5) The Results

The Sobral plates were measured by Mr Davidson and Mr Furner using a microscope micrometer. The plates from Principe were measured by Prof. Eddington. After obtaining the difference in the positions of the stars between the eclipse plates and the comparison plates, the angles then had to be corrected for differential refraction, aberration, orientation, and change of scale. Thus the mean of the average deviation from the standard point of reference was found for the stars on the eclipse plates and on the comparison plates.

Figure 1 gives the relative positions of the seven stars recorded on the plates of the 4-inch telescope at Sobral that were the most reliable of all the three sets. I have added the position of the corona flare, and it can be seen how close star 2 is, whilst 3 and 4 are also fairly near to the Sun.

POOR'S CRITICISMS

(1) The Mirror

The use of a horizontal telescope is not satisfactory where very accurate measurements are required as in these tests. The introduction of the mirror adds a further factor, one that was thought to be the cause of the useless results of the Sobral large telescope. If the distortion of the mirror was the cause of these errors, then surely this factor could also have affected the other results that were accepted as reliable. A distortion of the mirror affects the results over three times as much as the same amount of distortion of the lens.

(2) Refraction

(A) As the light rays from stars enter the atmosphere of the Earth, they are slightly bent due to refraction. The images have to be corrected for this and the value of this correction is about 100 times the value that the astronomers were looking for in the deflection due to gravity! Due to the angle between the stars, they had slightly different correction factors, but even this differential refraction was several times larger than the expected deflection of the light ray.

(B) The tables used for this correction are for night observations, whilst these experiments took place in the daytime. The comparison plates, however, were taken during the night under quite different conditions, and for the Principe plates, at Oxford several months earlier.

(C) As the cone of darkness passed over the sites, the air is often cooler and a high wind would have at times been generated. All this adds to the unknown and unusual effect that the air conditions could have had on the refraction of the rays.

(3) Diagrams

There are no diagrams whatsoever in the report that show the relative positions of the various star images on the plates, which to my mind could have been easily done and would have shown a great deal of interesting information. From the complex tables in the report, Poor plotted the results for the seven stars that gave reasonable images on the seven eclipse plates from the small Sobral telescope, and this plot is reproduced in Figure 1. The dotted circles enclose the star positions (crosses) on the comparison plates, whilst the full circles are around the eclipse plates, the stars being given the plate number on which they appeared. What is clear is the way in which the image of any one star varied from plate to plate, which under ideal circumstances should have been stationary. Even the comparison plates show considerable variation, but they are on average slightly more compacted than the eclipse images.

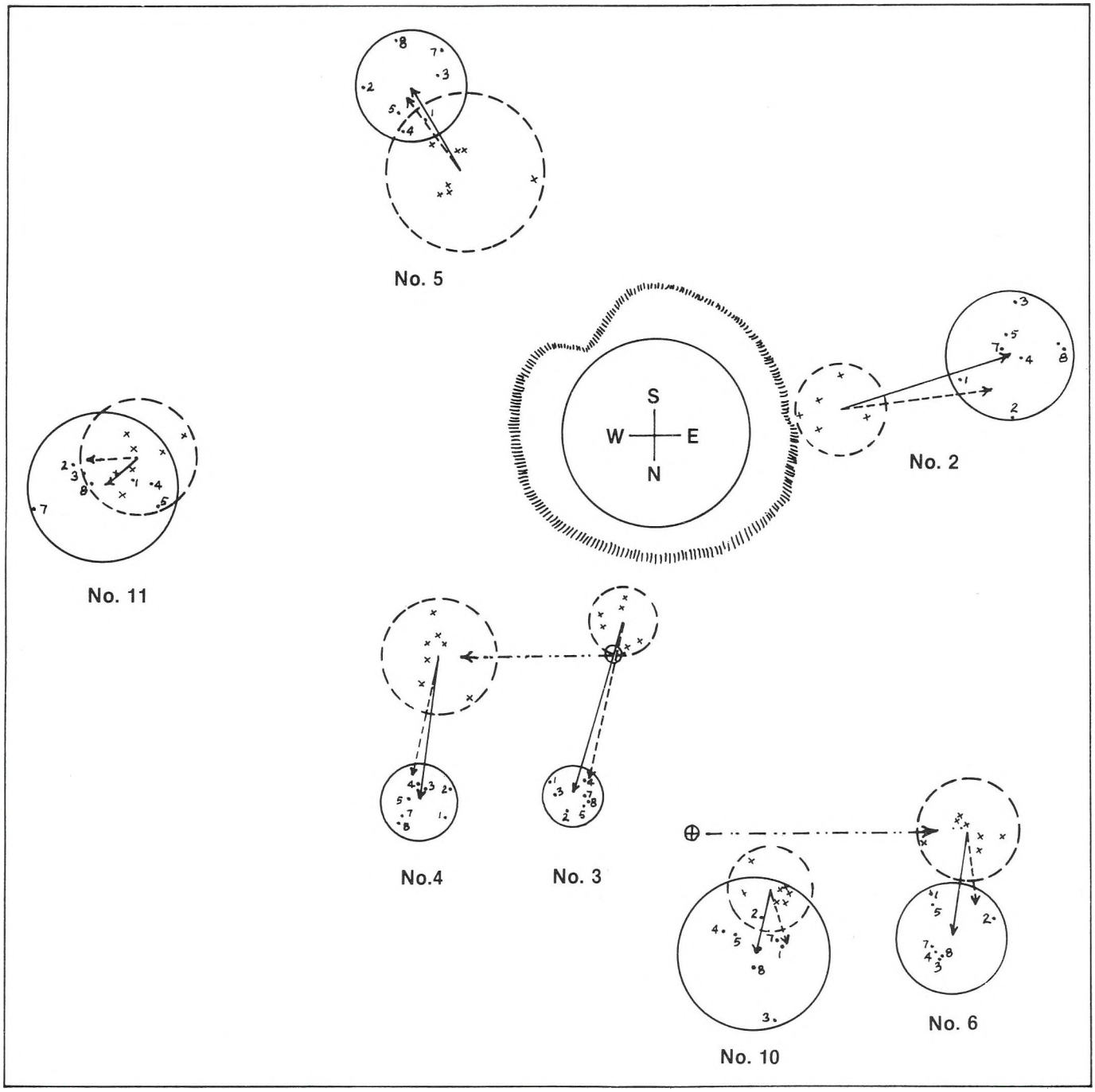

Figure 1. THE DEFLECTION OF THE STAR LIGHT

Explanation — The dotted circles are around the seven different plotted positions of the normal star position as measured on the seven comparison plates. The centre of this circle has been positioned in its correct relationship of the star to the centre of the Sun. The full circle is around the seven plotted positions of the stars on the seven eclipse plates. The full arrows give the directions and deflections (to a large scale) of the apparent deflection of the star from the average comparison position to the average eclipse position. The dotted line is the predicted amount and direction of the calculated Einstein deflection. The large discrepancy in angle between the measured deflection and the calculated deflection, particularly for stars 6, 10 and 11, can be seen. The positions of stars 4 and 6 have been moved to one side in order to avoid confusion with the plots of stars 3 and 10. The plotted deflections are Poor's, and these have been positioned correctly relative to the Sun in this composite figure by the author of this paper. The Sun's corona is also shown.

(4) Eclipse Conditions

The full arrows (in Figure 1) give the observed directions and values of the deflection, whilst the dotted arrows give the Einstein predictions. Again, there is a degree of correlation, but significant deviations. The effect of the cone of cooler air upon the measurements can be seen by tracing the movement of the images as recorded on plates exposed early in the totality and those late. Poor gives the increases of average deflections:-

Plates 1 and 2	.30"
3,4,5,	.34"
7,8	.38"

Thus there was an increase of 27% between the early and later measurements.

(5) Wide Variations

There are seven positions of the eclipse stars (from the seven plates) and seven positions of these same stars from the seven comparison plates. Thus for each star there are 49 combinations of "deflection" that could have taken place. Poor drew some of these 49 lines for the best star (No. 5) and the worst star (No. 11) shown in Figure 2. One of the main points he makes is that omission of some of the more discordant star positions would have radically affected the results of the measurements. For example, removal of the very discordant star position in the comparison plate of star No. 5 would have greatly reduced the close correlation of the Einstein deflection from the observed deflection. Similarly, omission of some of the plates for star No. 11 would have actually reversed the direction of the observed deflection.

(6) Correlation

From the scientists' report Poor reprinted the table that gave the correlation of their results:–

Star Number	Calculated Deflection	Observed Deflection
11	.32"	.20"
10	.33"	.32"
6	.40"	.56"
5	.53"	.54"
4	.75"	.54"
2	.85"	.97"
3	.88"	1.02"

The average observed deflection differs by 19% from the figure calculated according to Einstein's theory. Poor also points out that the difference in the deflection of the nearest star to that for the furthest star should be .56", yet the observed is .82" — a 46% error difference!

(7) Non-Radial Deflections

One of Poor's major criticisms is that the figures given are all for the radial component of the displacement. But as can be seen from Figure 2, for several stars the full displacement was at a considerable angle to that predicted. This feature was totally ignored by the scientists, and several other astronomers commented upon the omission of this aspect in the report. Thus, anyone not highly trained in the subject would be ignorant of the fact that the deflections appearing in the summaries of the report were only the radial component and that the actual total deflection was in some cases at a significant angle to the predicted value.

(8) Mirror Curvature

These non-radial deflections were carefully examined by another astronomer who was an avid supporter of Einstein's theory. He deduced that they could not be attributed to accidental errors of observation and measurement, and that they must be due to a systematic factor of some sort. He contended that the most likely source of these deviations was a curvature of the mirror, and after much effort, showed that a small cylindrical curvature of the mirror could account for these non-radial deflections.

If this is the case, then it is obvious that **all** these deflections could be due to some other warping of the mirror. As we have seen, the results of the 13" diameter telescope also at Sobral were rendered useless and there the temporary loss of focus during the eclipse was considered to be most likely caused by the mirror distorting. Great doubt therefore arises as to whether the results from the smaller instrument can be considered to be due to Einstein deflection in **any** of the measurements.

SOME ADDITIONAL CRITICISMS

Up to this point, I have simply summarised Poor's book, adding no observations of my own. However, having examined the original report, at this point I would add the following comments.

(A) The scientists' report mentions that under Newtonian principles' there would be expected

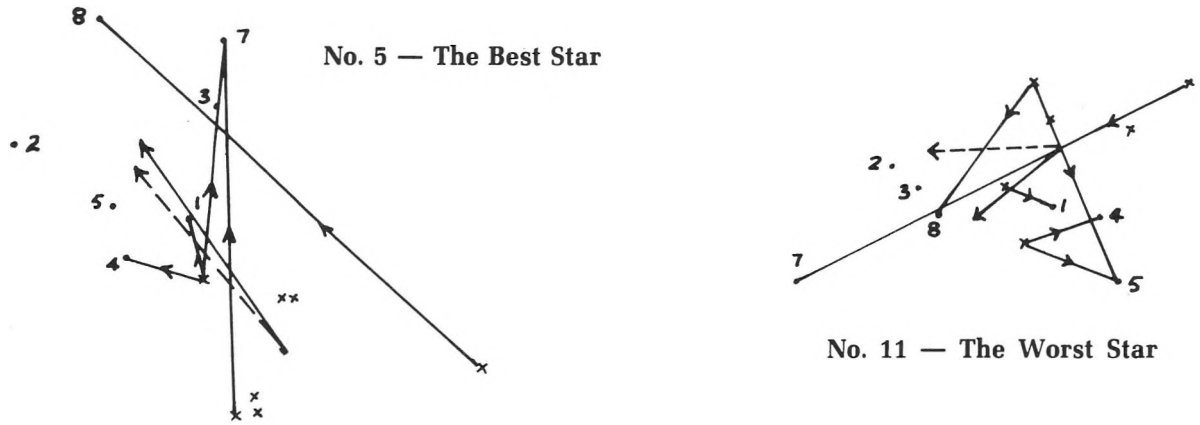

Figure 2: THE DISCORDANT RESULTS: STARS 5 AND 11 *Explanation — From the seven positions of each star recorded on the seven comparison plates to the seven positions on the seven eclipse plates, there are 49 combinations of deflections that could be made for each star. Poor plotted some of these 49 combinations for the best star and the worst star to demonstrate the wide range of deflections and angles that can be obtained by selecting various pairs of positions.*

deflection due to gravity of precisely half that predicted by Einstein. Thus, it becomes even more essential that the measurements are extremely accurate in order to determine which of the two theories is correct. The results of these eclipse measurements are so variable and unreliable that it is quite unsatisfactory to claim that they present both clear proof of Einstein's theory, and evidence against Newton's theory.

(B) The report is somewhat contradictory regarding the use of horizontal telescopes for making very accurate angular measurements. On page 3 it mentions that this type of telescope was thought to be suitable for eclipse photography, and this promoted its use. Following the poor results obtained from the 13" telescopes, the report rather lamely comments at the end that **"it is undesirable to introduce complications in the optical train",** that is, the use of the mirror is inadvisable. Yet Poor mentions that the distortions of mirrors was well known. As the mirror turns, even the distortion of the weight of the glass backing to the reflecting surface can alter the reflection and considerably affect the results. Yet it was this method that was chosen in an experiment that required accuracy of a very high order. Just how accurate the plates had to be can be judged from the fact that one second of arc represented a movement of only 1/900 inch on the plate which had to be measured with a microscope micrometer.

(C) In order to avoid the use of a mirror, a telescope has to be mounted pointing directly at the Sun, and moved to follow it across the sky. This form of mounting is much more difficult and expensive, but does give more accurate results. This type, however, was used by the Lick Observatory during the 1919 eclipse in an earlier exactly similar effort to check for the "Einstein" deflections of the starlight passing the Sun. The report refers to this experiment and says:

"The ***final results are not yet published. Some account of a preliminary discussion has been given, but the eclipse was an unfavourable one, and from the information published the probable accidental error is large, so that the accuracy is insufficient to discriminate between the three alternatives."***

This is a strange situation. A prestigious observatory carries out accurate measurements of starlight deflection using direct observation and avoiding the use of a mirror, but the results are declared to be so inaccurate that they are inconclusive. Yet at Sobral, a small lens is used together with a mirror and the results, although showing considerable diversity, are nevertheless claimed to support Einstein's theory, whilst all other results are rejected due to optical distortions.

(D) That unusual atmospheric conditions prevailed during the eclipse is confirmed in the report, for it notes:

"A ***few minutes after totality the sun was in a perfectly clear sky, but this did not last long. It seems likely that the break up of cloud was due to the eclipse itself, as it was noticed that the sky usually cleared at*** sunset".

Poor referred to the extremely large corrections that had to be applied to the observations due to the refraction of the rays through the atmosphere. With the abnormal conditions that occurred during the eclipse (and occur generally during eclipses), the normal tables would have been quite inapplicable,

Table 2: Comparison of Discordancies Predicted by Einstein and Poor (after Poor, 1922). (Figures are in seconds of arc per century.)

Planet	Amount to account for	Final Discordance Einstein	Poor
Perihelia —			
Mercury	+ 39.8	– 3.0	+ 0.1
Venus	– 7.3	– 15.9	+ 0.2
Earth	+ 5.9	+ 2.1	+ 0.3
Mars	+ 8.1	+ 6.8	+ 3.1
Nodes —			
Mercury	+ 5.1	+ 5.1	+ 0.6
Venus	+ 10.2	+ 10.2	– 1.5
Eccentricity —			
Mercury	– 0.9	– 0.9	– 0.2

yet nevertheless the report merely says the results were applied to the values of the constants found from the normal equations.

Summarising the discussion so far, it would appear that the combination of —

(1) the poor results obtained from most of the photographs,
(2) the application of large correction factors from tables compiled for normal atmospheric conditions to results obtained during abnormal conditions, and
(3) the severe warping of the mirror that ruined the results of the 18" Sobral telescope's photos and altered the 4" telescope's results

— renders the final values obtained almost worthless. Yet nevertheless the results were declared to support Einstein's theory as against the slightly smaller Newtonian result.

THE CLASSICAL METHOD

Poor concludes his book with an explanation of how classical methods can explain both the perihelion of Mercury and the curvature of light.

The Perihelion of Mercury

As the Sun is a rotating mass of gas, its very slight oblateness would account for about 7"/century retrograde movement. A more likely cause of the 43" measured is that there is a small amount of matter that is distributed around the Sun. Depending upon the position and density of this matter, the perihelion can be given a direct or retrograde motion of any required value. Poor calculated what this would have to be for the measured amount of Mercury's retrograde motion. This material would of course also affect other planets and their motions. From the Sun's oblateness and a certain distribution of matter, he arrives at the following effects that they would have upon the planets and also gives what Einstein's calculated values would be (see Table 2). The square of the differences (the residuals) is 14 for Poor's values and 473 for Einstein's. Thus Poor's very simple explanation of the various phenomena is far better than Einstein's.

Continuing on this line, Poor considers what the density of two rings would have to be and gives them as —

	Mass	Density
Inner ring	3	8.9×10^{-8}
Outer ring	4/7	1.3×10^{-10}

— with the unit of mass being Mercury. The inner eclipse of matter would have to have a tilt of 7 or 8 degrees.

The Curvature of Light

It is obvious that the most likely cause of the bending of the light rays would have been due to the presence of low density material around the Sun that refracted the light, in the same way that corrections have to be made for light entering the Earth's atmosphere. This possibility was brusquely dismissed by the report, for having quoted some very low densities of gases that would have been required, it simply says **"Clearly a density of this order is out of the question"** and gives the subject no further consideration.

Poor criticises the report for this omission, and proceeds to discover what the result would be if there was an "atmosphere" of low density matter

Table 3: Comparison of calculated Deflections by a Postulated Tilted Ellipse of Matter around the Sun (after Poor, 1922). (Figures are in seconds of arc.)

Star Number	Observed	Calculated	
		Poor	Einstein
3	– .3	– .6	0
2	+ 10	+ 5	0
4	+ 1	– 5	0
5	– 4	– 18	0
6	– 16	– 11	0
10	– 28	– 18	0
11	+ 36	+ 33	0

around the Sun which would refract the light as it passed by. He found that tilted ellipses of matter would refract the light away from the radial direction in a similar fashion to those observed. He gave these values in a table, (reproduced here as Table 3), to which he added the Einstein deflection that would be zero in all cases due to its being purely radial.

The residuals in this case are for Einstein 2,489 and for Poor 410. Thus Poor claims the assumption that there is a low density mass of material around the Sun is a far better explanation of the deflections of the light than Einstein's prediction.

POOR'S FINAL COMMENT

Thus the perihelion of Mercury and the deflection of the light can both be very well explained by the assumption that there is matter around the Sun. Poor, however, notes one further interesting correlation. The positions in space in which these ellipses of matter need to be in order to give the movement of the perihelion and the refraction of light are very similar indeed.

For the perihelion of Mercury these would be:–

Longitude of the Node	36 degrees
Inclination	7.5 degrees

These are very similar to those calculated by Newcombe:–

Longitude of the Node	48 degrees
Inclination	9 degrees

For the refraction of light, the ellipses would also have to be tilted, and again their position would be:–

Longitude of the Node	44 degrees
Inclination	7 degrees

Poor comments ***– "This is indeed a striking fact. Two radically different investigations, one on the*** motions of ***the planets, the other on the deflections of light rays, both lead to practically the same ellipsoid of matter. These results indicate, at least, the possibility of explaining the observed light deflections, if such deflections be real, by the refraction of the rays during their passage through the*** solar ***envelope, the shape of which is generally that of an oblate*** spheroid."

Thus, to my mind, the claim that both the perihelion of Mercury and the gravitational bending of the light passing the Sun are crucial evidence for the theory of relativity are totally unfounded. The explanation for both these phenomena can be simply obtained by assuming the very probable existence of a certain amount of matter around the Sun.

FURTHER CONSIDERATIONS

Amongst many other critics of Einstein's theory, Professor Dingle has written an incisive comment on the theory in his book "Science at the Crossroads".[5]

Professor Dingle was an ardent supporter of Einstein, but he came to realise that there was an inherent contradiction in the theory. This was that if A is stationary, and B moves away from A, when B returns his clock will be slower than A's. However, the theory does not allow you to determine whether B moved away from A or A moved away from B. Thus A could have equally well moved away from B and A's clock would then have been slower than B's. This is a self-contradictory result. Dingle sought for an answer to this problem for many years from his professional colleagues, but met considerable "coolness" and lack of willingness to engage in such a debate. Finally, having exhausted all possible channels to raise the issue and receive an adequate reply, he published his book on the subject in which

he sets out his criticisms, and the history of his many years of frustration. Those who wish to pursue this subject further may like to examine this work.

Recent Developments

Since Poor's book was published in 1922, there have been many developments and experiments that affect some of his alternative possible explanations for observations said to support relativity. In a recent personal communication, Dr J.W. Smith of the Department of Philosophy, The University of Adelaide (Australia) referred to aspects of the Fizeau experiment, so I have clarified the way in which Poor dealt with that subject. Smith also commented that even if relativity is proved to be incorrect, there are still other arguments against classical theory, and that furthermore, Dingle's criticisms and Fizeau's experiment refer to the Special Theory of Relativity, which may be approximately correct, whilst the General Theory may be wrong.

Barry Setterfield has commented in personal communication upon Poor's list of four possible causes of the perihelion of Mercury. Space probes, etc. have shown that possibilities 2 and 3 should be dismissed. Possibilities 1 and 4 are related, as there was a debate on whether the Sun had a rapidly rotating core which would explain a number of observations without relativity being used. It was the efforts to determine this that resulted in the discovery that the Sun is pulsating in and out with a period of 40 minutes. This and other evidence from the Sun supports Setterfield's speed of light decay model. A slight oblateness of the Sun has been measured which suggests that the Sun has a rotation of the core, and this could account for the effect upon Mercury.

Regarding the curvature of light, Setterfield suggests that this could be due to the effect of the corona around the Sun, which is extensive and may even reach to the Earth.

These comments do not refute Poor's claims. Indeed, they support his criticisms that the effects claimed by Einstein as proving his theory can in fact be explained by non-relativistic models. We cannot here go into a full resume of the evidence against the theory of relativity, but such a compilation is badly needed for the enlightenment of the layman.

RELATIVITY AND EVOLUTION

It has been our sole purpose here to bring attention to the existence of criticisms of the theory of relativity as given in Poor's very revealing and interesting book. Some personal reflections may however provide further food for thought.

I was already aware that there were critics of relativity and that its proof was far from certain. I was accordingly somewhat doubtful of the whole subject. It was during my reading of Poor's work that several correlations came to mind between the theory of relativity and that of evolution. I set them out as follows:

(1) There was a distinct atmosphere in the report that the interpretation of the results was slanted towards support of the theory. Other explanations of the deflections, such as matter around the Sun, were abruptly dismissed, and it was claimed that **"the theory is also *confirmed* by the motion of the perihelion of mercury".** A reference to the discrepancies in measurements of the spectral lines was ambiguously worded and it was admitted that certain areas of the theory may need revision, but maintained that ". . **.it appears now to be *established* that Einstein's law.** . .", in view of the perihelion of Mercury and the eclipse results. This "force fit" of the evidence to comply with a particular theory is often apparent in much of the evidence supporting evolution.

(2) There is an aura of "high mystery" around the theory, insofar as a full understanding is only open to those who have studied the subject in depth as specialists. The logic is at times intricate and as Dingle has pointed out, ultimately self-contradictory. In a similar fashion, evolution is accepted as a "fact" by many, often not because they have the evidence themselves, but because people cannot believe that experts, who appear frequently on their television sets and who are household names, could all be wrong.

(3) When the theory was published, there was a fairly rapid acceptance by leading scientists who carried out what amounted to a "crusade" in order to persuade their less convinced colleagues of the rightness of the theory. Popular books were also written so that the public might understand the basis of the theory and its effects upon high speed space travellers. Graphic descriptions were given of how those who embarked upon such adventures would all come back much younger than those they left behind!

In the same way, evolution quickly dominated the scientific establishment by the secretive "X Club", whilst many senior appointments in the newly-emerging British universities were made by "Darwin's Bulldog", Thomas Huxley.[6:112–4]

This appearance of prestigious authorities in

furthering evolution is recognised by those creationists who challenge the academic world on the subject. When Darwin received the famous paper from Wallace, their joint papers were read to the Linnaean Society by Charles Lyell and Joseph Hooker. One commentator said that had it not been for the authority under whose auspices it appeared, it would not have been worthy of remark!

In these papers on "proof" of relativity also, the name of Professor Eddington appears as one of the experts. A supporter of relativity, he was co-organiser of the Principe expedition and was the one who measured the plates, but unfortunately they were marred and little weight was given to them in the final analysis. A Mr Davidson, however, appears to have played a more prominent part. He was the co-author with two highly qualified scientists of the final report and he was the co-organiser with Dr A.C. Crommelin, of the Sobral expedition. When it was discovered that stopping down the lens improved the images of the stars, it was he who wrote to the Principe expedition. Similarly, the measurement of the more successful Sobral plates was carried out by him and another colleague, not Dr Crommelin.

(4) When Darwin published his book "The Origin of Species", it actually received little notice for some time until Huxley and others forced it upon the public's attention. Darwin then became a hero in a short space of time, receiving much praise for his famous "discovery". His fame became world-wide and his achievements were finally marked by his being given a burial in Westminster Abbey.

Einstein has also received very similar publicity and acclaim at a national level throughout the world. In his case, it is a little surprising that this should have occurred. He was a theoretical mathematician in an obscure area of physical research. His relativity theory, even today not proven, can hardly be said to have affected the lives of ordinary citizens in any way whatsoever. In view of this, one is left wondering why the mass media and the people behind it should have accorded him the phenomenal adulation he has received.

The thought will naturally spring to mind that Einstein must be right as we have today the atom bomb and acceptance of a well-known formula $E = mc^2$. The atom bomb surely owes nothing to Einstein's theories, whilst few seem to know that the famous formula was first produced, not by Einstein but by Poincare, for which the latter has received little or no credit.

As one who firmly supports the pioneering creationist work of Barry Setterfield and the many repercussions of the decrease in the speed of light[7], one wonders whether his evidence would be affected by the disproving of relativity. Such is unlikely, for he maintains that his formulae could be reworked on the basis of Newtonian physical laws.

In considering the theory of evolution, many have realised that it is fundamentally an anti-Christian philosophy, with the potential of reducing to a bestial existence any culture that follows its teaching to its logical conclusion. Nothing like this could be charged to the theory of relativity. There is, however, another area that these two philosophies have in common.

Evolution is very effective in conditioning people to constant change of their circumstances and welfare — all in the name of "evolutionary progress". All is contended to be unstable as people and life "progress" on the inevitable course of evolution.

In a parallel fashion, relativity removes all landmarks in a physical sense, and there is no fixed point of reference. Again, all is free and independent of other spheres of influence.

It has been pointed out[3:139] that evolution, particularly the latest version called "punctuated equilibrium" is very effective in preparing people for revolutions, as they have been conditioned to expecting change.

Although I cannot at the moment see that relativity has the same seed at its root, this correlation may be worth further consideration by those more expert in cultural and scientific philosophy.

REFERENCES

1. Lee, **J.,** 1980. The triplets paradox. **Creation Research Society Quarterly, 17 (4),** pp. 47–49. Also, "Letters to the Editor", **Creation Research Society Quarterly, 17(4),** p. 230; **18(1),** p. 77; and **18(2),** p. 130.
2. Slusher, H. and Ramirez, F., 1985. **The Motion of Mercury's Perihelion: a Re-evaluation and its Implications for Cosmology and Cosmogony.** Institute for Creation Research, San Diego, Technical Monograph No. 11.
3. Poor, C.L., 1922. **Gravitation versus Relativity.** G.P. Putnam's Sons, New York and London.
4. Dyson, F.W., Eddington, A.S., and Davidson, C., 1923. A determination of the deflection of light by the sun's eclipse of May 29. 1919. **Memoirs of the Royal Astronomical Society, 62,** 1–43.
5. Dingle, H., 1972. **Science at the Crossroads.** Martin Brian O'Keefe, London.
6. Bowden, M., 1982. **The Rise of the Evolution Fraud.** Sovereign Publications, London.
7. Setterfield, B., 1983. **The Velocity of Light and the Age of the Universe.** Creation Science Association, Adelaide, Australia.