Eight Essays in Support of

Non-Relativistic Physics

By Arthur G. Gross

Preface

Arthur G. Gross is an independent Research Engineer, born in Ohio in 1911, the youngest of 9 children, and a 1938 graduate of Caltech. Since the late 1950s, he has worked alone on what he considers an engineering task -- a search for hidden mechanisms in the physical sciences. He prefers to write in terms of the “we” of an engineering report. Using an HP-9816 computer obtained in 1982, and the software that he developed, he was able to solve many problems that were encountered in his work. As the computations were made with sixteen-digit accuracy, he could maintain a close check on the values obtained. His essays are the result of over 40 years of dedication to the advancement of knowledge in the physical sciences. He believes these are critical issues, and that there is a need for others to carry the work forward.

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Dayton C. Miller and the Michelson-Morley Ether Drift Experiment

A Brief Overview of Miller's Findings

The Michelson-Morley experiment is without a doubt one of the most important scientific experiments ever conducted. It was based on Michelson's ingenious concept of a device to compare the velocity of light in two directions. This device, now known as the Michelson interferometer, operates by generating a fringe pattern by the superposition of two beams of light having a common source, but different paths. The outstanding feature of this device is its sensitivity, as its unit of measure is the wavelength of the light used.

In the following figure we have shown a schematic of the Michelson interferometer to illustrate the manner in which it operates. The active portions of the two optical arms both start at the half-silvered mirror and stop at their end mirrors. Its method of operation is quite simple and can be described as follows. When the beam of light from the light source strikes the half-silvered mirror at 45 degrees, half of it is reflected at 90 degrees and the other half passes directly through. Both of these beams of light are then reversed in their direction by their end mirrors. The two beams then again strike the half-silvered mirror and a portion of each pass on to the telescope. When this combined light is viewed with the telescope, a fringe pattern such as that shown in the illustration can be seen. It is the shifting of this fringe pattern to the left or to the right that provides the quantitative data obtained. When Michelson conceived of such a device, he no doubt recognized many ways in which it could be used, but the application that was in his mind at the time was the measurement of the earth's ether-drift. This being the case, we can be sure that Michelson had already made the calculations showing such a device to be sensitive to an ether velocity.

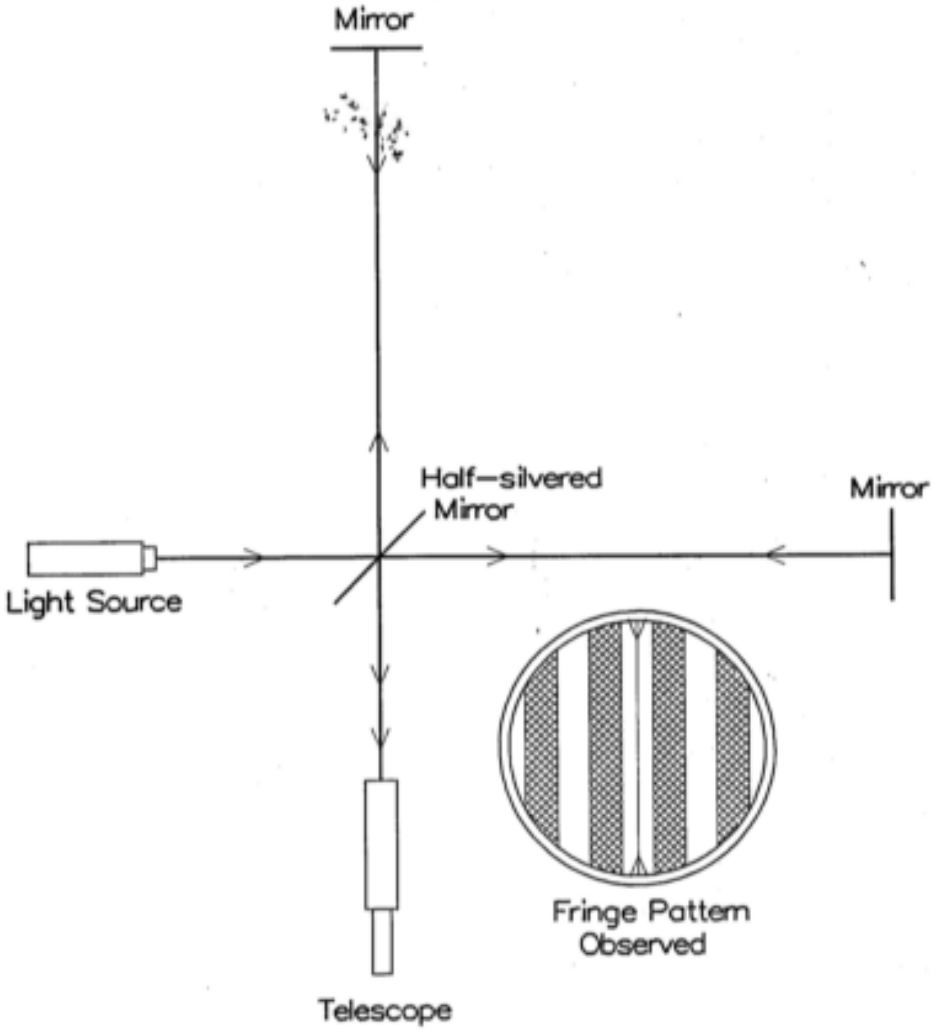
For the ether-drift experiments the interferometer was mounted with its optical paths in a horizontal plane and it was rotated about a vertical axis. Then to meet the need for greater sensitivity, its optical paths were folded one or more times to increase the effective length of the optical arms. In Miller's final experiment there were two folds giving an effective optical arm length of 31.92 meters.

Prior to the ether velocity experiments it was generally believed that light was propagated in a quiescent ether medium that filled all space. This being the case, it was reasoned that Michelson's device should be able to measure the velocity of the earth's motion relative to this medium.

The initial experiment with this device, attempting to measure the earth's ether velocity, was conducted in 1881 by Michelson himself. In a letter to Alexander Graham Bell, reporting the findings of this experiment he states:

"If the ether were at rest, the motion of the earth through it should produce a displacement of the interference fringes, *at least* one tenth the distance between the fringes; a quantity easily measurable. The actual displacement was about one one-hundredth, and this, assignable to errors of the experiment."

The negative findings of this experiment came as a disturbing surprise to many, as it created doubt as to the existence of the ether medium itself. When the much more sensitive Michelson-Morley experiment was then conducted six years later, it was again found that there was no evidence of an ether velocity at any time. As it became apparent that this finding was to have a significant effect on the future of scientific theory, a number of repetitions



The Michelson Interferometer

of the experiment were then made by others, using more sophisticated means, all failing to detect an ether-drift. It was then the general consensus that the Michelson-Morley experiment gave a negative result.

There was, however, one of the experimenters who had certain mental reservations. He was Dayton Miller, originally a member of the Michelson-Morley team. Miller contended that although the experiment gave a negative result, it did not give a zero result. This possibility was recognized by others as being critical, as it was contrary to one of the basic postulates of the then rising Theory of Relativity. Miller was then able to obtain support to make a repetition of the Michelson-Morley experiment with the apparatus and the methods designed to detect low-level signals.

Miller must have known that this was to be his last chance to prove the existence of the ether velocity that he believed to exist. Therefore, the experiment had to be an all-out effort to obtain a positive proof. Not a test of three or four days, but a test having four test epochs throughout a test year. This was especially important in regard to the determination of the direction of the earth's orbital velocity for each of the epochs. The possibility of "noise" obscuring true signal had to be avoided by obtaining a vast number of data readings, so that the noise would be averaged out, leaving only the true signal. Rules had to be established as to the procedure of operation so as to procure highly accurate data. Rules also had to be established for the rejection of data that was considered to be unreliable due to one or more of the many difficulties that Miller describes in his report. No doubt there were many more procedures required to obtain highly accurate data that were then know only to the veteran experimenter with the Michelson interferometer, Miller himself.

In his report Miller outlines his ether-drift experimental activities prior to his final experiments at Mount Wilson as follows. Ether-drift observations consisting of twenty-five sets of 995 turns made in collaboration with Professor Morley 1902,1905, eighty-six sets of 1146 turns made in Cleveland in 1922-1924 and one hundred and sixty-six sets of 1181 turns made at

Mount Wilson in 1921 and 1924.

Miller's final observations were then conducted at Mount Wilson for the four epochs of April 1, August 1, and September 15 of 1925 and February 8 of 1926. Here it is apparent that Miller altered the order of the test days, making the data of February 8 of 1926 his test day 1. Our concern here was in regard to the effect of such a change in the Right Ascension of the Sun, which is a very important parameter in our study. To check this we took two Ephemerides of successive years and found that the Right Ascension of the Sun was effectively the same throughout both years. We thus concluded that Miller's alteration of the sequence of the test days was permissible.

Each of these epochs lasted for three or four days in order to get a full coverage of valid data over the twenty-four hour period. The number of sets of observations for these epochs was thirty-six, ninety-six, eighty-three and one-hundred and one, respectively, giving a total of 6402 turns of the interferometer, involving over 200,000 readings.

Later in 1926, when Miller first reported his findings of the Mt. Wilson experiments, he stated that there was a constant motion of the solar system in space toward an apex near the north pole of the ecliptic, having a right ascension of 17.5 hours and a declination of +65 degrees, with a velocity of ten kilometers per second. He also stated that the earth's orbital effect, if it existed, was certainly small and though the search so far had failed to demonstrate its influence, he was confident that it would be found by the further study that would be carried on for that purpose.

Due to other demands, it was not until the autumn of 1932 that the restudy of the Mount Wilson observations commenced. This time the study was based on the assumption of the alternate possibility that the motion of the solar system was along the same cosmic line previously determined, but in the *opposite direction*, placing the ether velocity apex near the south pole of the ecliptic. Miller pointed out the painful fact that, at that time, an adequate

analysis and calculation of the observations of the four epochs, based upon any one set of assumed conditions, required the time of an expert analyst for perhaps a full year. Fortunately, with the lengthy calculations made, a wholly new consistent solution was obtained, giving both a determination of the motion of the solar system and the expected directions of the orbital motion of the earth.

In Miller's report he makes a very detailed report of all aspects of significance from the nature of the test apparatus to the fine details of the findings. The particular item that we find to be the most informative is his plot of the findings on the southern hemisphere of a celestial globe. We will use such a plot in our attempt to convey the most significant aspects of his findings.

In working with the celestial globe, our data is limited to the positional coordinates of Right Ascension and Declination. What is needed to make the plot are the coordinates of the earth's velocity vector
for each of the four test days. Miller used two methods to compute these values, and then computed the average for the two. The first method was based on the observed magnitudes and the second was based on the observed azimuths.

The findings of Miller's repetition of the Michelson-Morley experiment are summarized in his chart published in Nature 133 (1934) pg 163, which we have reproduced here. It is a polar plot of the equatorial coordinate system, with the south pole at its center. The four asterisks show the direction of the ether velocity apex obtained by Miller for each of four test days extending over a period of a year. One would normally expect that the direction of the earth's ether velocity would remain constant throughout the year with all four asterisks at the center of the circle, but as is shown in the graph there is poor agreement between the directions obtained for each of the test days, with a variation between them ranging up to seventeen degrees. This variation could be considered to be simply the data scatter of a very difficult experiment. However we wish to demonstrate that Miller did a

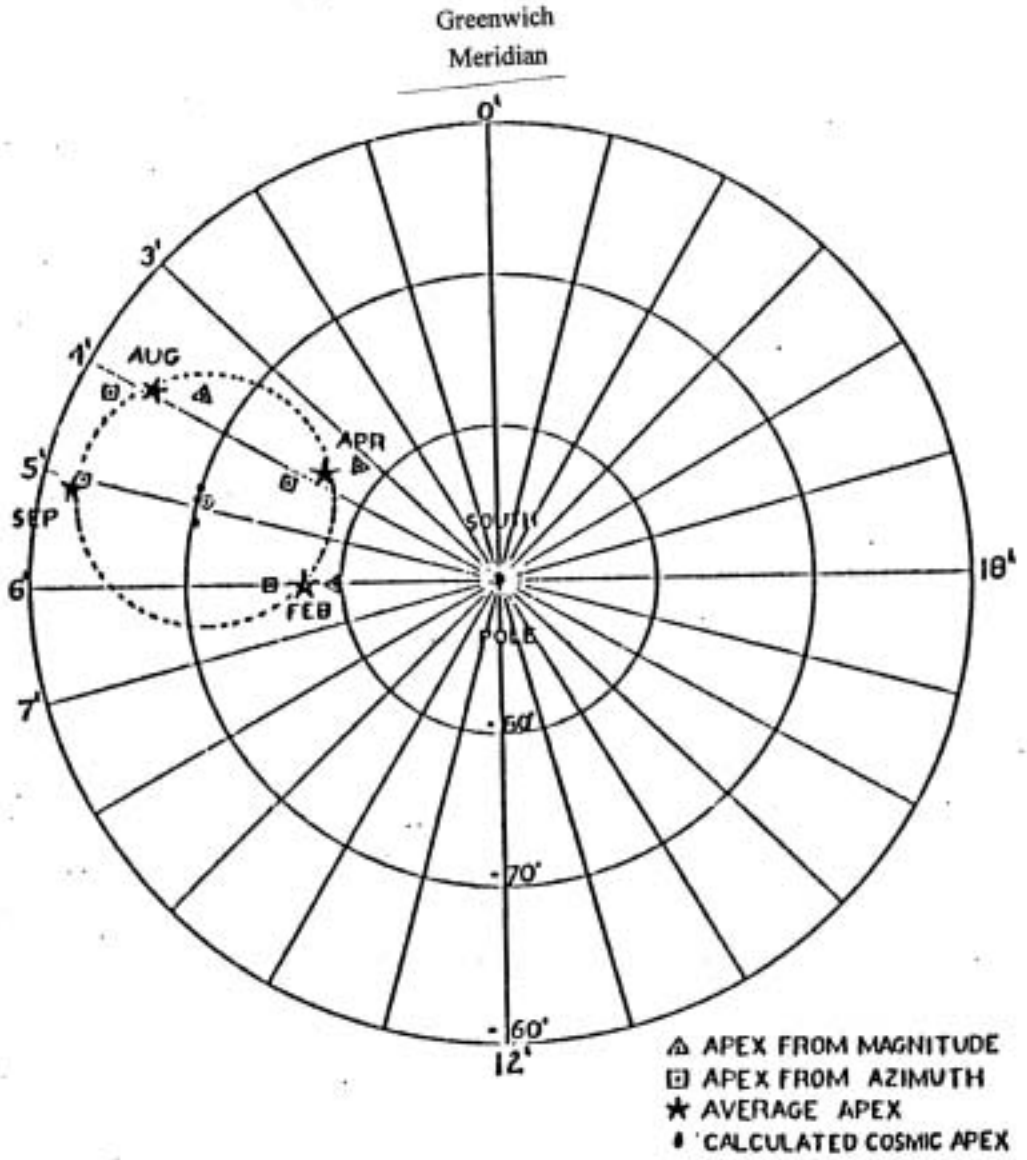


Chart of the observed apexes of the resultant absolute motion of the earth.

Miller's Chart - Nature 133 (1934)

remarkable job in measuring and reporting what was there to be measured. To do so we will start by pointing out certain strange regularities to be found in Miller's polar plot.

Strange Regularity 1

The first regularity to be observed in Miller's plot of his four ether velocity apexes is that a circle can be drawn that passes through each of the four data points. We consider this to be a strange regularity as for three points you can always plot a circle that passed through all three points, however to add a fourth point it must be a precise distance from the center point of the circle for the first three. Miller refers to this circle as his *aberration circle*, but he offered no explanation as to its cause.

Strange Regularity 2

The second regularity, which is a regularity of progression, was also recognized by Miller, but he failed to stress the point in either the figure or in the text. That is, in labeling his apex points he uses the months, FEB, APR, AUG and SEP, whereas we have used the test day number 1, 2, 3 and 4. We do so to stress the fact that the test points have an orderly progression in the earth's orbit about the sun.

Strange Regularity 3

To probe deeper into the above regularity, we have computed the angular displacement between test days and compared these values with the number of days between test days. As we expected, the greater the angular displacement, the greater the number of days required. This demonstrates that besides a uniformity of order, we also have a uniformity of progression in time.

That apparently ended Miller's 31 yearlong attempt to demonstrate the existence of an ether-drift, and both Miller and his experimental findings

were soon forgotten to all but a few. But, the mystery of what caused all the points of accord that Miller did obtain, remains today.

A Historical Overview

Upon the completion of the second epoch of his Mount Wilson experiments, Miller reported his findings in the journal Science (Vol. LXI, pp 617-621, June 19,1925) with the title "Ether-drift Experiments at Mount Wilson". It was of typical length for such a report, four pages long, disclosing an observed ether-drift of 10 km/sec. This report came as a surprise to all, as the general consensus of opinion was that the Michelson-Morley experiment failed to show evidence of an ether-drift. Then, upon the completion of the test series, he published a second paper in the journal Science (LXII, pp. 433-443, April 30,1926) with the title "Significance of the Ether-Drift experiments of 1925 at Mount Wilson". In this eleven page report he presents a detailed history of the experiment, followed by a description of his procedures and a number of graphs of the obtained data. He repeated his prior disclosure of the magnitude of the ether-drift being about ten kilometers per second, but then added the disclosure that, according to his latest calculations its direction was toward the northern constellation Draco.

There followed a period of many debates and conferences, involving our leading scientists as to the validity of such findings, as they were considered to threaten the experimental foundations of the then rising Theory of Relativity. It then appears that with the passage of time, and no further support for Miller's claims forthcoming, the debate terminated, leaving Miller in a very difficult position.

It is not until July of 1933, eight years after his initial report, that Miller published his final report on the Mount Wilson experiments. But this time it was not a report of the typical four or five page length, but a total of 39 pages! It appeared in the journal Review of Modern Physics with the title "The Ether-Drift Experiment and the Determination of the Absolute Motion of the Earth" (Vol. 5, 1933, pp. 203-242). This report provides a full

coverage of the Michelson-Morley experiment, from its conception to the data graphs of his final Mount Wilson experiments. On the basis of the classical ether theory, it appears that there is nothing of significance in regard to this experiment that has been omitted. The findings of the experiment and the method of their analysis are covered in great detail. But the disclosures were effectively the same as the disclosures he made in his prior reports, except for a switch from a northern to a southern velocity apex. Now the question is, knowing the weak position that he was in, what did Miller have in mind in submitting such a report for publication? And further, how did he get the acceptance for publication of such a report by one of our leading scientific journals, at a time when ether theories had already become scientific tabu?

In our opinion, the answer to both of these questions is the same, and that is that the publication of Miller's report was intended for the archives. Although it would no doubt be ignored by the contemporary scientist, it was hoped that sooner or later an archive searcher, having the advanced knowledge of the age, would come upon it and read it with a degree of understanding that was not attainable by either Miller or his contemporaries. In other words, it was a plea. Miller was certain that he was measuring something of a cosmic nature and he conceived of this method to pass the problem on to a later, more advanced generation.

Very well, that was many years ago and we are of a later, more advanced generation, let us now see if we can come up to their hopeful expectations. To do so we must again become an ether theorist. To start, we must first recognize that with Miller's maximum observed fringe shift being limited to only about five percent of that based on conventional ether theory, we must accept the Lorentz-Fitzgerald hypothesis of zero fringe shift with ether velocity and search for the cause of Miller's fringe shift elsewhere. The question then becomes: *If Miller was not measuring an ether velocity, then what was he measuring?*

A major step in our solution to this problem occurred when we acquired

a copy of the book "Astronomical Data: Planets and Stars", by K. R. Lang, published in 1992. There he lists the known astronomical data on the four now known candidate black holes. It is said that it was only in the late 1960s that most physicists began to take black holes seriously, some 35 years after Miller's experiment. The two black holes that we are interested in are the LMC X-1 and LMC X-3. The LMC stands for their location in the Large Magellanic Cloud. The equatorial coordinates of LMC X-1 are Ra_hms=5.4005 and Dec_dms=-64.0605 . For the LMC X-3 they are Ra_hms=5.3840 and Dec_dms= -64.0634 . As we find their directions to lie only 3.75 degrees apart, we will consider them to be a single black hole having a mean direction of Ra_hms= 5.3923 and Dec_dms= -64.0620 . From the recent literature on black holes we find that black holes lie some several thousand light years away and that the first black hole to be located was the LMC X-1. We then find that the center of Miller's aberration circle lies in the direction of the two black holes.

At the time of these writings in the year 2002, we are once again returning to the Miller report to see if we can find the reason for his strange aberration circle. However, the situation has changed somewhat from the last time that we attempted to do so in that we have since made a study regarding a search for a neoclassical physics. In that study we have concluded that at the orbital radius of the earth the velocity of the light coming from the Sun is slowed. Under these conditions we have both a slowing of the velocity of light coming from the black holes and a slowing of the velocity of light coming from the Sun. Whereas the direction to the black holes remains fixed throughout the year, the direction to the Sun varies.

At the time of Miller's experiment it had long been recognized that a Michelson interferometer with the Lorentz-Fitzgerald contraction would be insensitive to an ether velocity. How are we to then to explain the cause of Miller's fringe shifts? Our answer to this question is that Miller's fringe shift was being caused by two one-way decrements in the velocity of light, one from the black holes and one from the sun. Whereas the velocity of the light coming from the black holes remained constant in direction, that coming

from the sun varies in direction throughout the year.

The fact that the center of Miller's aberration circle points to a black hole is ample evidence that his Michelson interferometer was able to detect a slowing of the velocity of light coming from a black hole. We are therefore confident that the interferometer could also be able to detect a slowing of the velocity of light coming from the Sun. It would then be the combination of these two effects that generated Miller's aberration circle.

That being the case we then have means of checking this possibility, and that is that under these conditions the right ascension of the Sun at each epoch must be such as to produce a slowing of the velocity of light in the specific directions shown by Miller's aberration circle. Fortunately, we were able to locate an Astronomical Ephemeris for the year 1927, which should be close enough to do the job. There we found the right ascension of the Sun at the time of each of the test epochs to be as follows.

Day	Date	1927 Ephemeris Right Ascension of the Sun.			
1	Feb 8, 1926	21 hr.	22 min	40 sec	320.7 deg
2	Apr 1, 1925	0 hr	37 min	45 sec	9.4 deg
3	Aug 1, 1925	8 hr	40 min	41 sec	130.2 deg
4	Sept 15, 1925	11 hr	27 min	30 sec.	171.9 deg

Then from Miller's graph of his aberrational circle we can measure the angle of right ascension of each of his four apex points. The angle of the apex point path is determined by adding 90 degrees to the apex point directions. The values thus obtained are as follows.

Day	Date	Miller's Aberration point +90 deg.
1	Feb 8, 1926	320.5 deg.

2	Apr. 1, 1925	39.5
3	Aug 1, 1925	130
4	Sept 15, 1925	171.7

Here we find that the direction of each of Miller's four aberration circle points, plus 90 degrees, show an excellent accord with the direction to the Sun except for Day 2, which is off by about 30 degrees. As this is only one data point out of four, we will simply assume it to be a data error.

CONCLUSIONS

We thereby arrive at the conclusion that Miller's experiment is telling us two things. First, that there is a slowing of the velocity of light coming from the now known black holes. Here it becomes apparent that the explanation of the Miller experiment demands the existence of black holes. And second, that there is a slowing of the velocity of light coming from the Sun. Although this information regarding the findings of the Miller experiment is quite late in coming, it comes at a time that there is a great need of demonstrated truths regarding the nature of physical reality.

In the foregoing writings on Miller's experiment, we have, for the sake of simplicity, written as if it was a one-man endeavor, which of course it was not. To remedy this situation, we will close by adding the final lines of Miller's report, where he acknowledges the assistance of the many others who enabled him to make his remarkable research findings.

MILLER'S ACKNOWLEDGMENTS

"The experiments here presented have involved the taking of an enormous amount of observational material, by far the greater part of which was for the purpose of making adjustments and for preliminary trials of conditions; while only the smaller portion, which is still very large, has been used in the final calculations. The reduction of this mass of material has

been exceedingly laborious. No other experiment comes to mind which has involved such an amount of detail and such extended study. This has required considerable attention from many different persons. The writer is under special obligation to Professor J. J. Nassau, of the Department of Astronomy of Case School of Applied Science, for very great assistance in the analysis and in the mathematical solution of the numerical and astronomical features of the work since the beginning of the Mount Wilson observations in 1921. Dr. G. Stromberg and other members of the staff of the Mount Wilson Observatory have given advice and assistance of the greatest value. Several research assistants have each, for considerable periods, been identified with the experimental work and the reduction and calculation of the observations; among these the following should be especially
mentioned: R. F. Hovey (1920-1923), H. A. Pritchard (1923), Willard Samuelson (1924), G. Brooks Earnest (1925), F. W. Taylor (1925-1926), Donald H. Spicer (1926-1927) and James R. McKinney (1932-1933). Dr. R. M. Langer was a most efficient assistant throughout all the observations made at Mount Wilson in 1925 and 1926, which constitute the principal material for the conclusions of the present report. Professor Phillip M. Morse assisted very effectively in the first analysis of the general problem of the absolute motion of the solar system, and he made a considerable part of the calculations for the first solution of this problem in 1925-1926. The writer's research associates, Professor John R. Martin (1927-1931) and Mr. Robert S. Shankland (1932-1933), have been directly associated with the restudy of the problem which has resulted in the final determination of the absolute motion of the solar system and the orbital motion of the earth as presented in this report."

"Case School of Applied Science has made possible the continuous prosecution of the study of the ether-drift problem. The Carnegie Institution of Washington and the Mount Wilson Observatory made available the exceptional facilities of Mount Wilson for observational work from 1921 to 1926. Mr. Eckstein Case provided funds for the very considerable expenses involved in making the elaborate series of experiments and tests." End of Miller quote.

Essay #2, by Arthur G. Gross ©2003

A Return:
In Search of a Neoclassical Physics

This work is being dedicated to the memory of Albert Einstein, who was above all, a devoted seeker of truth.

In the past there have been a number of books written by non-physicists, who were apparently disturbed by the many so-called paradoxes of the Theory of Relativity, suggesting possible means by which this theory could be rejected. To a modern day physicist, such a suggestion would certainly appear preposterous, as this theory not only provides the tools by which he makes his discoveries, but continues to show accord with the many new experiments devised to test it.

This essay too is written by a non-physicist, disturbed by the many paradoxes of the Theory of Relativity, but one who has used the findings of this theory as a guide in his search for an alternate system. Students in the physical sciences should recognize that this is a highly speculative work based on mechanistic models, where many assertions are being made that are contrary to what they are being taught in their classes. Our sole support is the degree of quantitative accord with known physical parameters that these assertions bring about. What we are attempting to do is to switch from the world of the mathematician to the world of the engineer. The former is based on the weird concept of a four-dimensional curved space-time, using mathematics that is accessible to only those that are both gifted and highly trained in the mathematical sciences, whereas the latter is based on the Newtonian concepts of space and time, with new easily comprehensible physical entities along with new easily comprehensible physical mechanisms, without the use of the higher mathematics.

These are the following three effects that are used to demonstrate the validity of the General Theory of Relativity.

The bending of starlight by the sun.
The advance of perihelia of the inner planets.
The time delay of light passing near to the sun.

In the relativistic solution to these problems the Riemannian curvature tensor has been used, which implies a curvature of space. Our effort has been to demonstrate that, on the basis of an updated classical physics, there are mechanistic solutions to these problems that would eliminate the need for the perplexing concept of a curvature of space.

With the excellent software that we have found and that we have developed, we have been able to solve the many problems that we have encountered in our work. As the computations were made on a sixteen digit system , we were able to maintain a close check on the accuracy of the values obtained.

In these writings we will be referring to the General Theory of Relativity, but at no time will we be working in terms of it. Although we are hopeful that they will be read by the physicists, they are being written for an ease of comprehension by anyone wishing to know about our concepts regarding the basic nature of physical reality. The information upon which we have based this research has come from the many books that we have collected and the open stack libraries at UCLA.

The break-down of the contemporary classical physics, which began around the first of the nineteenth century, was due to the fact that it was unable to explain many of the new experimental findings that had been made. This was recognized as being a major crisis and many of the world's top scientists went all-out in attempt to reestablish an accord. There were those who asserted that it was classical physics that was wrong, suggesting possible modifications. It soon became apparent that either changes had to be made

to classical physics or a new system devised to replace it.

Now, as we look back and attempt to visualize the situation that existed at the time, we find it best described by the word *futile*, for the reason that the scientific discoveries opening the way to the right system had not yet been made. The most important of these we believe to be Sommerfield's discovery of the Fine Structure Constant in 1919, which has been found to be, in some mysterious way, a fundamental physical constant. But by this time there was no longer the search for a new system and the full significance of this discovery went unrecognized.

Fortunately at that time the world had the genius Albert Einstein, who was able to devise a system that has now served us well for nearly a century, in spite of its extreme difficulty and its many so-called *paradoxes.* Our objections are not to imply that Einstein has led us down a wrong path, as classical physics failed to accord with the new findings and an alternate system that could show accord was in immediate need. But, if this is true, how are we now to regard Einstein's Theory of Relativity? To answer that question, we will borrow a rather homely comment that we once read, and that is, *"Einstein, with his Theory of Relativity, has kept the physical sciences from going down the drain"*.

The most revolutionary feature of the General Theory of Relativity is the four-dimensional curved space-time geometry that is used in its computations. With the many successes of this procedure, one cannot object to its use, but here we believe that an error enters in. And that error is the failure to recognize that the procedure used is simply a mathematical device, a device that works in terms of strange entities, such as the curvature of space, that in our opinion have no counterpart in physical reality.

In this search we aim to add to the *how* of modern field theory, the *why* of classical mechanics. Of course, we will be using three-dimensional Euclidean space and the Newtonian concept of time. We will adopt the Lorentz-Fitzgerald contraction, but with the understanding that the

dimensional change with ether velocity is physically real and not dependent on the choice of the frame of reference. Furthermore, it is the local clock-rate and other cyclic phenomena that slow with ether velocity, rather than time. We will at no time use the distorted measuring rods, protractors or clocks associated with a system with ether velocity. At all times in our calculations, we will use the rest measuring rod and the rest clock. Thus, the concept of relativity, with its four-dimensional space-time, is gone and we are back to the system of Lorentz, which is the system upon which the Special Theory of Relativity was based.

But it is the system of Lorentz that first upset classical physics by introducing the strange concepts of the variations in mass, length and time that occurred with ether velocity. His assertions led to the conclusion that for a system with an ether velocity equal to that of light, masses become infinite, measuring rods pointed in the direction of the ether velocity have zero length and clocks are stopped. However, these assertions were made without the usual support of a mechanistic explanation.

The assertion of the slowing of clocks with ether velocity led to what has been called the *twin paradox.* That is where an astronaut, after spending many years at high ether velocities, returns home to find that he appears to be younger than his twin brother that has remained at home. However, in assuming that biological processes also slow with ether velocity, there would be no paradox as the returning brother would actually be *biologically* younger.

There is yet another very strange Lorentzian assertion in regard to the mass of a body with ether velocity, and that is that its apparent mass in the direction of its motion differs from its apparent mass in the lateral direction. This is yet another very odd effect that must be taken into consideration in the design and testing of our mechanistic models. These are all very strange assertions, but so far no experiment has yet been devised to refute them. Classical physics was then apparently given its death blow by Einstein's famous equation for the energy of matter, E=MC^2. Where E is energy, M

is mass and C is the velocity of light.

So far in these writings, we have spoken of the ether velocity as though it was a velocity relative to a quiescent ether medium, in accordance with the accepted belief at the time of Lorentz. It is here that we make certain changes in the classical physics that we are to return to. We will now describe the nature of certain of these changes and the manner in which they were arrived at.

We will start with a mechanism of gravitation that we conceived of many years ago after reading a newspaper article describing the amazing penetrating power of the then recently discovered particle
called the neutrino. The mechanism was that in place of an ether medium there was an ether flux composed of a vast number of neutrino-like particles traveling in all directions at the velocity of light. For two bodies close together there would then be a force of attraction between them because each would tend to shield the other from the bombardment of the ether flux particles on their facing sides.

After contemplating the possibilities of such a mechanism for a period of time, we finally made a search of the literature to determine if the concept was new. Our search revealed that not only did the concept have quite a history, but even Newton knew of it! It was first conceived of by the little-known Nicholas Fatio, who was a close friend, co-worker and confidant of Newton himself. It is said that at the meetings of the Royal Society, Newton would arrive with Fatio and he would leave with Fatio. It is also said that when men of science came to London to learn of Newton's latest thinking, rather than bothering Newton, they would go see Fatio. We now find that our progressive knowledge of the nature of the Neutrino tends to support Fatio's concept of a universal ether flux, for it is now believed that trillions of such particles pass through the human body each minute.

Apparently the main reason for the rejection of Fatio's theory was that for such a mechanism the direction of the gravitational force would have an

angle of aberration similar to that of starlight, and there is no evidence of such a effect in the motion of the planetary bodies. Fatio attempted to avoid this objection by assuming the velocity of the ether flux particles to be many times the velocity of light, but apparently this was not considered to be an acceptable explanation.

For our version of this mechanism we have set the velocity of the ether flux particles at the velocity of light, so that they could also serve as the carriers of light energy. The problem of the aberration of the direction of the gravitational force effectively solved itself in the design of our elementary particles of matter, but here we ran into a problem regarding frames of reference. With the ether medium concept the term *ether velocity* obviously meant velocity relative to this medium, but with an ether flux there is no such frame of reference. To fulfill this need, we devised what we call a *balanced frame of reference*, and have defined it as a frame of reference relative to which all ether flux particles travel in straight lines at the velocity of light. We then use the term *rest* to signify the condition *at rest relative to a balanced frame of reference.* We are of the opinion that it was the lack of such a frame of reference that caused the many paradoxes of the Special Theory of Relativity, such as the non-addition of velocities and the non-simultaneity of distant events, and forced Einstein to resort to a four-dimensional space-time geometry for his General Theory of Relativity.

We then come to the problem of the structure of matter. As we now recall, our model for an elementary particle of matter was arrived at by considering the propagation of light through a dense optical medium, such as a plate of glass. Here, a photon arrives at the surface of the glass at the velocity C, but it is then immediately decelerated to a velocity that is just a fraction of C. This deceleration occurs at the surface of the glass, where the interior portion the velocity is constant, but when it leaves the glass plate, it is instantly accelerated to the velocity of C, which is mechanistically an absurd situation. Apparently there is a hidden mechanism that is causing these strange effects. Our problem was then to conceive of the nature of this mechanism. The solution to this problem that we have arrived at is that the

elementary particles of matter are composed of rings with a large number of subparticles rotating about the ring at the velocity of light. (Here the dropping of the hyphen from the word "Subparticle" is intentional.)

There is then the possibility that the photon would momentarily join the subparticles of the ring in their orbit at the velocity C and then break away for a momentary transit period. Here it becomes apparent why the subparticles of the ring must have an orbital velocity of light. The transit of the photon through the glass would then be a series of dwell-transit periods. Thus the photon maintains its velocity of C, yet it has the reduced velocity through the glass plate. The index of refraction of the optical medium would then be dependent on the ratio between the transit times and the dwell times for the medium involved. This we will call our Dwell-Transit mechanism for the propagation of light.

At that time we did not know of Alfred L. Parson's ring model of the atom that was published under the title, "A Magneton Theory of the Atom" in the *"Smithsonian Miscellaneous Publications"* 65(1915, 1-80). For this model it was an electrical charge that rotated about the ring at near the velocity of light, and therefore the mechanistic aspects with which we are concerned were not involved. There were a number of technical articles written regarding Parson's ring model, but lacking the mechanistic support of an ether flux with an ether flux interlock, the model was soon forgotten. What we are attempting to do is devise a mechanistic model for the elementary particles of matter that will show accord with certain of the known features of atomic behavior. If we are able to do so, it should lead to revision in certain of our concepts regarding physical phenomena.

In contemplating the consequences of our dwell-transit mechanism of light, Fresnel's ether-drag optical experiment came to mind. In this experiment he effectively compared the velocity of light along a tube of water, with the water at rest and with the water flowing through the tube. He found that the velocity of the light was altered by the flow of the water through the tube by increasing its velocity in the direction of the flow of the

water. It is here that the term *ether-drag* originated. For our dwell-transit mechanism, this is an obvious effect as during the dwell period the photon is at rest relative to the subparticles of the ring, but the ring has the velocity of the moving medium so naturally carries the photon along with it.

However, in comparing the formula for the velocity of light in a moving medium that we had derived with Fresnel's formula, we found no similarity. In evaluating the difference between the two, the first thing that became apparent was that for the limiting condition, where the velocity of the medium is C, our formula gives the correct value of C, whereas Fresnel's formula gives a value of 1.25 C, which is obviously in error. When we then searched the literature on the subject, we found on page 18 of Pauli's book on Relativity, the very same formula that we had developed, apparently derived by Max von Laue on the basis of relativistic considerations. We therefore conclude that our dwell-transit mechanism is in accord with the findings of Fresnel's ether-drag experiment. Here we have an example of the same formula being arrived at by two disparate systems, that we mentioned earlier.

This same mechanism should then explain why the water-filled telescope experiment, first suggested by Boscovich in 1766 and later conducted by Airy in 1871, failed to detect a variation in the angle of aberration of starlight. Let us consider this experiment in terms of the dwell-transit mechanism. During the transit periods the path of the light will be unaffected by the water, but during the dwell periods it will be carried along with the telescope. Under these conditions there should be no variation in the angle of aberration of the starlight. The prior explanation of this effect was that the ether was in some way being dragged along by the motion. And here we find that it is the motion of the rings of matter that is doing the dragging.

There is yet another feature of this model that those with a knowledge of the Theory of Relativity will quite possibly find to be unacceptable. And that is that we have particles of matter traveling at the velocity of light, which, according to the Theory of Relativity, would mean that these particles

would have an infinite mass. However, in our model you will find that the subparticles of the rings of matter are an exception to this rule.

As far as the mechanism of the propagation of light is concerned, there is one relatively simple optical experiment that we find to be most interesting, and that is Thomas Young's double-slit optical experiment. When a beam of light is projected on these slits, a pattern of parallel bands are generated by these slits. Close one of the slits and only one broad band appears. We find the most interesting feature of this experiment to be that the pattern of parallel lines remains even when the time between photons is too great for them to interfere with each other. But again, close one of the slits and broad band appears. The big question then is, how do the photons "know" if both slits are open or not. With the introduction of ether flux particles as the carriers of light energy, there is the possibility that the interfering action takes place in the ether flux particles and it is only made visible by the addition of light energy.

That is about as far as we can go with our mechanism for the propagation of light, as we have no concept of the mechanistic nature of a photon, nor do we know how it is propagated along a linear path. So at this point in our study we will shelve the difficult problem of the propagation of light and concentrate on the possibility of a ring structure of the elementary particles of matter. To start, we will work with a ring model of the electron. and limit our considerations to the case of zero ether velocity. Here our frame of reference will be a balanced frame of reference, relative to which all ether flux particles travel in straight lines at the velocity C. Therefore, the velocity of the ether flux particles tangent to the ring will also be C. With our assumed orbital velocity of C for the subparticles of our ring, we then have the condition of interlock with the subparticles of the ring at zero ether velocity. To evaluate this model we must then draw from the books the precise values of the electron parameters that have been established by some of our most capable researchers of the past.

The first of these parameters, *mass,* presents no problem as it is well

established.:

Me=9.109534E-28 gram

We then come to the problem of the radius of the ring, which is more involved. There are various ways of calculating this radius using the established physical constants, but the one most easily visualized is based on Compton's wavelength of the electron, Cw_e. Now we are to assume that Compton's wavelength of the electron, Cw_e, is actually the circumference of our ring electron. Thus making its radius

Re = Cw_e / (2*PI) = 3.86159E-11 cm

The next parameter of our ring model of the electron to be investigated is its Angular Momentum at rest, due to its spin. This is simply,

Ang_mo = Me *C * Re

Here we find that all of the elementary ring particles at rest, regardless of their mass, would have a spin angular momentum equal to Planck's h-bar constant, as with an increase in mass there is a corresponding decrease in radius. This should prove to be a significant feature of our model, however, the experimentally determined value of the angular momentum of the electron has been found to be just about half this amount. In considering this problem, the first thing to be recognized is that angular momentum is a vectorial quantity, that is, it has direction. Now if the ring model has a gyratory motion, the direction of the angular momentum vector would be constantly changing. Under these conditions the average angular momentum measured in one direction would be less than actual, which could provide a mechanism to bring the angular momentum of our ring model of the electron into accord with its experimentally determined value.

The next parameter of our model of the electron to be investigated is its Magnetic Moment at rest. Bohr found that the basic unit for magnetic moment in atomic phenomena was 9.274E-21 erg/gauss. For our model we treat our ring as a simple current loop and calculate its magnetic moment from the established formula:

Mag_mo = Eem * Nu_e * PI * Re^2 = 9.274070E-21

which shows it to be one Bohr magneton. However, the experimental value

that has been determined is 1.001146 times the Bohr magneton. There is then the possibility that the anomalous portion of this magnetic moment is due to a spin of the individual subparticles of the ring. But here we run into the problem that the Magnetic Moment of the electron is also a vectorial quantity and according to our above reasoning its observed value should be only half its actual value. Perhaps the means of measuring Magnetic Moment aligns the axis of spin while that for Angular Momentum does not.

We now come to the problem of determining how our ring model at rest can posses the enormous energy of MC^2. Of course, with its orbital velocity of C, it already has half this amount in kinetic energy, but we have learned that this is not the energy of concern. We have found that the energy of MC^2 must take the form of a potential energy. Our procedure for determining this energy is as follows.

Working with the circular model of the electron at rest, the electron charge was divided equally between the subparticles, with equal distance between subparticles, giving a problem of ring stability because of the repulsive force between subparticles. We then added the assumption that there is a tensile latching force between adjacent subparticles that holds the ring together by means of hoop-tension. It is then apparent that such a structure will have a potential energy, similar to that of a compressed spring. We will call this energy the *energy of assembly*. To compute the energy of assembly we effectively assemble the ring, subparticle at a time, summing the work required to bring each new subparticle in from infinity. This is a time consuming task because of the vast number of calculations involved. As to the known parameters of the ring, we know that its mass is Me=9.109534E-28 grams, its radius Re=3.86159E-11 centimeters and its charge Ees=4.8032424E-10 electrostatic units. The only parameter that we were then lacking for the process of assembly was the number of subparticles in the ring. This we could vary in our computer runs to determine the optimum value.

Now upon computing the energy of assembly for a range of subparticles

in the ring, we found that the energy of assembly was only about one-tenth of the MC^2 value. To bring it up to MC^2 the repulsive force between subparticles would have to be increased by a factor of about 11.706. However, it was not long before we recognized that this factor was the inverse of the square root of the Fine Structure Constant, which has the value 11.706239. In our computer runs we have therefore adopted a force adjustment factor of Kr=11.706239.

We then made runs increasing the charge of each of the subparticles by the Kr factor. We found that for 472 subparticles in the ring, the energy of assembly was 0.999909 * MC^2. We consider this to mean that as far as the subparticles are concerned, in their mutual interaction their effective charge is increased by the factor Kr relative to the charge of the electron as a whole. If this proves to be true, we have then hit upon an explanation as to the physical nature of the "*mysterious*" fine structure constant.

Here we find that for the electron we are in full accord with Einstein's formula of MC^2 for the total rest energy. To maintain this accord for the more massive ring particles, we must then make the assumption that the inner repulsive force between subparticles increases in proportion to a factor that is equal to the mass of the particle divided by the mass of the electron. For example, as the mass of the proton is about 1836 times that of the electron, its rest energy of assembly of the proton should be about 1836 times greater than that of the electron. Thus, the rest energy of all ring particles would be in accord with Einstein's MC^2.

* * * SWITCH TO MOVING SYSTEM ***

We now advance to consider a model of our ring model with an ether velocity. In this study it is essential to get a clear picture of the mechanistic nature of the model that we are working with to understand the problems involved. First, our model will be two-dimensional, rather than three-dimensional, because of the complexities involved in a three-dimensional system. However, there are possible three-dimensional consequences of

significance that will be considered later. The first problem that we encounter is in regard to the frame of reference to be used. In our prior calculations at zero ether velocity we were able to use the *rest* or *balanced* frame of reference, but with ether velocity this is no longer possible.

In considering the behavior of our ring model with ether velocity, the first problem that we encounter is its alignment relative to the direction of this velocity. In all probability it must be a complex gyratory motion that is beyond our ability to compute. So what we have done is to ignore the possibility of a gyratory motion and assume that the plane of the ring remains in the direction of the ether velocity.

What we must have is a *moving* frame of reference that has an ether velocity of "V" relative to a balanced frame of reference. As to the directional terminology to be used, *longitudinal* means along the line of ether velocity and *lateral* means perpendicular to the longitudinal. With ether velocity, the ring will contract longitudinally in accordance with the Lorentz-Fitzgerald hypothesis, forming an ellipse. For our needs, we will assume that the plane of this reference frame is superposed on the plane of our ring model with its origin at the primary focus of the ellipse and its x-axis parallel to the semiminor axis. The ether velocity of this frame of reference is then in the direction of its negative x-axis. Now as we make our observations, it is our laboratory along with its observer that has the ether velocity, the ring remains stationary before us along with the moving frame of reference. We will have no need for the more complicated case where there is yet another medium in motion relative to our laboratory frame of reference. What we observe is a lateral contraction and a increase in the orbital period of the ring that occurs with ether velocity. However, our measuring rod is a rest measuring rod and our clock is a rest clock. At no time do we use either the distorted local measuring rod nor the slow running local clock. If we were to do so, our findings would be that nothing changes from the rest state.

Some of the terms that relate to the motion of bodies through the ether that we will be using in our discussion are as follows. C means the

experimentally determined value of the velocity of light at the surface of the earth. Beta equals V/C, which means the magnitude of the ether velocity in terms of the velocity of light. The factor Rho, which is equal to the square-root of (1-Beta^2), is a simple trigonometric relationship that occurs frequently in problems involving ether velocity. It is equal to *one* at zero ether velocity and decreases to *zero* at the velocity of light. We find Rho to be the most important factor in our calculations, as it is used to adjust distances, times and inertial masses.

The directional terminology presents a problem in that there is need for two sets of terminology, one for linear motion such as an ether velocity and one for curvilinear motion such as that of a body in orbit about a central body.

As we have already indicated, for linear motion we will use the term *longitudinal* to indicate the direction of motion and the term *lateral* to indicate a direction that is perpendicular to the longitudinal. For curvilinear motion we use the term *radial* to indicate the direction of a radial from the central body, and the term *transverse* to indicate a direction that is perpendicular to a radial.

M is the mass of the ring particle under consideration and remains constant under all conditions. The ether velocity of the ring relative to a rest frame of reference is specified by the value given to Beta, which is the ether velocity expressed in units of C. The prefix term *Delta_* means "change in", and finally, E=MC^2 is Einstein's famous equation for the rest energy of matter and it is read "*M C squared*".

We have rejected the possibility of a subparticle distribution based on the Keplerian equal swept area per increment of time that is used in Celestial Mechanics, mainly because at the high velocities the distance between suparticles at pericentron would be too great to be in accord with our assumption of a latching force between adjacent subparticles.

In its place we are to use what we term to be a "Lorentzian Subparticle Distribution", which is based on the Lorentz-Fitzgerald contraction hypothesis. As with this subparticle distribution,the distance between each adjacent subparticle pairs decreases with ether velocity, this problem is eliminated.

There is one feature in regard to this particular subparticle distribution that has done much to simplify the analysis of our data, and that is that there is a subparticle located at each of the four points where the elliptical axies intersect the ring, and these four subparticles maintain these positions for the full ether velocity range. We call them our "Cardinal Points" and have named them North, East, South and West. Our main interest is in the data at these four points as there we know the precise theoretical values of the critical parameters, which can serve as our "Target values". Furthermore, the Lorentzian subparticle distribution has the advantage that the parameters of our four cardinal subparticles are easily specified as they invariably have the same subparticle numbers:

North = 0 East = 118 South = 236 West = 354

For simplicity, we have limited this study to a two-dimensional model with all of the action taking place in the x-y coordinate plane. With the value of Beta specified, we know both the subparticle distribution and the ether velocity. Although we find that with ether velocity the frequency of all cyclic devices such as clocks slow, our calculations are based on a rest clock.

In computing the kinetic energy of the ring, we encounter an odd situation. It is apparent that with ether flux interlock at the velocity C, the kinetic energy of the ring relative to a rest frame of reference will be equal to .5*Me*C^2. However, in our calculations we find that the kinetic energy of the ring relative to the moving frame of reference serves as one of our critical parameters and must therefore be determined.

* * * RingMod6e & RingMod6p ***

Our initial studies have involved the behavior of our ring models with ether velocity in gravity-free space. There we know the precise theoretical values of the various parameters of the four subparticles where the elliptical axes intersect the ring, which we call our Cardinal Points. These programs are not orbital programs as they serve to compute the data at the four cardinal points only. We then make our calculations to see how well our computed values at these points accord with the theoretical target values. Two computer programs are involved, "RingMod6e" for the electron and "RingMod6p" for the proton.

* * * Our Basic Goals * * *

1. To compute the energy of assembly of our ring model of the electron at rest, in order to determine how well it accords with Einstein's E=MC^2.

2. To compute the energy of assembly of the ring at various velocities to determine how well it accords with the assertions of the Special Theory of Relativity.

3. To determine, at the very low ether velocities, if the computed additional energies of assembly above the rest condition are in accord with the classical kinetic energy of the ring.

4. To determine if there is a velocity interlock between orbiting subparticles and the ether flux particles along its path, for the full ether velocity range.

But here our problem is that the normal mathematical procedures used in making such calculations are so very involved that they can only be understood by those trained in this particular field. So with this barrier in our way, we have been forced to develop an alternate means of analysis that should be easily comprehendible by all. Our solution to this problem is based

on the fact that with the coming of the computer, there is now an alternate way of making such computations.

The means by which our computer solves the orbital problem is quite simple in that it only computes a very small step in the orbital path at a time. To compute this step it first determines the forces acting on the body, then with the components of the velocity known it is able to compute both its new position and new velocity for that step. This same procedure is then repeated about the full orbital path. To simplify the calculations, the origin of the coordinate system remains at the center of the central body and the orbiting body is treated as a unit mass test point. For accuracy, the computations are made on a sixteen place system. We then have precise position and time data about the path to enable the computation of the remaining parameters of the orbit.

We first conceived of such a process many years back when we were working with an HP-41 hand-held calculator and developed coding to cope with the many problems involved in the use of such a procedure. The most difficult problem was the generation of the requisite starting parameters as there was the lack of data from prior steps upon which to base such calculations.

It was then in 1984 that we made a most fortunate finding. It was in a book titled:
"*Computer Methods for Mathematical Computations"* 255 pp. 1977.
Written by: G. E. Forsythe, M. A. Macolm and G. B. Moler. Published by Prentice-Hall, Inc. On pages 129 to 155 they present the *Subroutine Rkf45*, with examples of its use. It is defined as "A subroutine for solving initial value problems in ordinary differential equations which is based on Runge-Kutta formulas developed by E. Fehlberg in 1970 and implemented by L. F. Shampine and H. A. Watts in 1974. It requires six function evaluations per step." The subprogram itself contains much detailed text explaining its operation.

Recognizing the potentialities of such a subroutine, we worked round-the-clock to learn to use it with a workable understanding of its operation. It was then not long before we could see that it was just what we needed for the solution of many of our problems.

---------FINDINGS REGARDING ENERGY OF ASSEMBLY -------

Here we draw on the data from our computer runs of 4-5-98. We find that there are two causes for an increase in energy of assembly with ether velocity. The first is that as the orbit contracts longitudinally with ether velocity, the subparticles of the ring are brought closer together, thus increasing the energy of assembly. And second, an increase in the repulsive force between subparticles by our factor Kr, associated with the Fine Structure Constant. Below we display the factors of accord obtained for the high velocity range of ether velocities.

Energy of Assembly Accord with Relativistic Total Energy

Beta	Ratio(A/R)
.1	1.00199
.3	1.01751
.6	1.0496
.9	.9284
.98	.6265

BUT WHAT ABOUT THE OTHER ELEMENTARY PARTICLES?

With the above favorable findings regarding the performance of our ring model of the electron, we were of course interested in the performance of the same ring model for the other elementary particles. We therefore developed a program called "Combo_4" that obtained the same data for the Proton, Neutron, Muon and Tau. To our surprise, as far as the factors of accord were concerned, the data obtained for each was effectively the same as that for the electron. We then made a further check with an imaginary particle that we

called the "Zonton", with a mass of 1.000000E-11 gm, which is between the masses of the electron and the proton. When we checked its performance we found that it too had the same performance as the others.

There is yet another aspect in regard to this model that should be of interest to those with a knowledge of Paul Dirac's contributions to Quantum Physics. We read on page 53 of Robert Shankland's text "Atomic and Nuclear Physics" (1955), *"According to the relativistic wave equation, an electron traveling along a path with velocity V also oscillates about this path with a period of` h/2mc^2 describing this latter motion with the speed of light. This means that the region about the electron's path in which its oscillatory motion occurs has an average extension of about h/Me*C = 2.43 E-10 cm., which is Compton's wavelength of the electron.*"

Now we view this description as one of the early attempts to describe a relativistic or quantum process in terms of classical mechanics. However, our interest in it lies in how well it accords with a description of our ring model of the electron. The strange oscillatory motion at the velocity of light becomes perfectly clear when we contemplate the orbital motion of the subparticles about the ring. The only discrepancy being where he states *"oscillates about this path with a period of h/2mc^2'.* For our ring model the effective period of oscillation would be just twice this value.

Re: KINETIC ENERGY

In the above calculations, where gravitational potential is not involved, we have neglected the kinetic energy of our ring model for the following reason. With ether flux interlock, each of the subparticles will maintain a velocity of C relative to a rest frame of reference, regardless of its ether velocity. This means that the kinetic energy our ring relative to a rest frame of reference will remain at .5 * MC^2 at all times. It then follows that the rest energy of our ring is actually 3/2 * MC^2 rather than MC^2. As there is ample experimental evidence that the available energy is MC^2, we have an apparent disaccord. The reason for this we believe to be that in the process

of the disintegration of the ring, the subparticles are ejected at a super-C velocity, dissipating the energy of assembly, but then leave the system at the velocity of C. Hence, the kinetic energy is carried off with the departing subparticles and it is only the energy of assembly that is accessible. If this is the case, we are most fortunate in our study, for then it is only the energy of assembly with which we are concerned. Therefore, in making our non-gravitational energy comparisons with those of the Theory of Relativity, we have disregarded this inaccessible kinetic energy and dealt only with the accessible energies of assembly. However, this is not a valid procedure where there is a gravitational field, for there we find that both the orbital velocity and the kinetic energy of a ring is a function of the gravitational potential.

Let us now inquire into the reason why relativistic theory has both a longitudinal mass and a lateral mass for a body in motion. We will first give our ring particle half the velocity of light in the longitudinal direction. The result is that the ring will contract longitudinally into an ellipse. This is the condition from which we will operate. Now, to further increase the velocity in the longitudinal direction demands a greater amount of energy because it demands a further contraction of the ellipse. But if instead, we then accelerate the ring in the lateral direction, it acts as though the system were at rest, for all that it is actually doing is to rotate the ellipse already formed, rather than increase its eccentricity. Thus, the inertial longitudinal mass is much greater than the inertial lateral mass. So here again we have one of the strange assertions of the Theory of Relativity guiding us in our search for an updated classical physics.

It is here that we reveal what we believe to be the most important mechanism that we have yet found. We see it as a multi-function action that serves to give much of the puzzling uniformity that is found in nature. We refer to this mechanism as *ether flux interlock*. With ether flux interlock, it is only those ether flux particles that have very near the same velocity and direction as a given ring subparticle that can interact with it. This hypothesis is supported by the fact that the interaction time is longest for such a relationship. With such a mechanism, each of the subparticles would be

constantly given impulses to keep them interlocked with the ether flux particles. We have already seen that for our model there is a precise ether flux interlock for the case of zero ether velocity, we now extend it to cover all ether velocities.

To determine if this postulated ether flux interlock actually exists for our ring model, we will compute both of the velocities relative to our moving frame of reference. The velocity of the subparticles are easily computed as we know their displacement for each increment of time, however the computation of the velocity of the ether flux particles along that same path becomes more involved. The computer line that we have developed for the velocity of the ether flux particles is

C_prime(N)=SQR©^2-((V*COS(Vang(N)))^2))+V*SIN(Vang(N))

When we then add these formulas to our computer program to determine the degree of ether flux interlock being obtained, we find that there is a surprising degree of accord for the full range of ether velocities. Even at an ether velocity of .999 times the velocity of light, there is still an accord in the first three or four digits. Now as our program has no coding to equalize these two velocities, we must then conclude that this interlock occurs naturally, without an interaction between the ring subparticles and the ether flux particles. Here it becomes apparent why high velocity celestial bodies, or even orbital bodies, are not decelerated by an *Ether-drag*. The reason for this being that with ether flux interlock, there is no velocity differential between the ring subparticles and the interacting ether flux particles to cause a drag force.

- - - - - ON THE NATURE OF INERTIA - - - -

With our ring model of the elements of matter, the nature of the property of inertia becomes apparent. A ring particle with ether velocity will have a certain degree of contraction with an associated energy of assembly. Change that velocity and both the degree of contraction and the energy of assembly

will change. It is then the input or output of work required to produce this change that we call inertia.

Well that's about as far as we can go with our two-dimensional program and we are in no position to start on a three. But in contemplating the possibilities of a three-dimensional model, certain possible mechanisms became apparent regarding problems that we have not yet considered. We will do so now.

The problem that we find to be the most interesting relates to the strange wave-particle nature of the elementary particles of matter. That is, under one set of experimental conditions they are observed as waves, and under another set of experimental conditions they are observed as particles. Now we can see how our rings could be observed as particles, but our problem is, how could they be observed as waves? With much unproductive experimentation and a search of the literature, we finally found what we were looking for. It was located in the book *"Advanced Dynamics of a System of Rigid Bodies"* by Edward J. Routh. It was published by Dover, but is now out of print. Although, with our limited knowledge of the subject, we found the text to be highly technical and difficult to comprehend, it gave us sufficient information to suggest the following dynamics for our ring model. For ease of visualization, we will assume the case of zero ether velocity in our considerations.

We start with the rotational axis of our ring in a vertical direction. Now, in the three-dimensional model of the ring that we conceive, the instantaneous axis of rotation describes a ninety degree cone for each rotation of the subparticles about the ring. At one instant the rotational axis is pointed in the direction of the x-axis and then when the subparticles have made half a revolution about the ring, it is pointed in the direction of the y-axis. To fit into the picture we would then have to assume that the ring maintained a precise ether flux interlock at all times. This gyratory motion could be called bi-axial conical spin, we will call it simply *bispin.* Now it takes no stretch of the imagination to see how such a bispinning particle could exhibit wave-like

characteristics that were in accord with its other known properties. Under these conditions a source of ring particles, all having the same frequency and phase of spin, should generate a standing wave pattern, the same as that observed for light. The fact that we were unable to generate this mode of motion experimentally could then be explained on the basis that the gyratory motion of bispin is supported by an ether flux interlock and is therefore out of the range of our capabilities.

Essay #3, by Arthur G. Gross ©2003

Ringmod6e

A Ring Model of the Electron without a Gravitational Field

The following is a program source code list for Ringmod6e, followed by a runtime printout. The program was originally developed on an HP9816 Series 200 using Rocky Mountain BASIC 2.0. The program has been converted to run on current personal computers with Windows 95 through Windows XP using HTBasic for Windows, version 9.0, available through the TransEra Corporation (www.htbasic.com). The source code is presented in landscape mode to prevent the wrapping of text lines.

```
!  Last modification 10-29-02ag  Disk: HP G_3_6_01 File: "RingMod6e"
Program$="RingMod6e"     ! Computer: HP9816 Series 200 BASIC 2.0
!
!  This is a computer program relating to a ring model of the electron
!  that we have developed in the study "In Search of a Neoclassical
!  Physics" by A. G. Gross.
!
!  The ring model of the electron without a gravitational field.
!
!
!   In our study of the orbital behavior of our ring model of the
!   electron without a gravitational field, it should first be recognized
!   that it is NOT the orbital model of Celestial Mechanics for the
!   following reasons. First, there is no central body and there is a
!   totally different set of forces involved. Second, the major axis is
!   viewed as being vertical, rather  than horizontal, and third, angular
!   measure as well as orbital motion are clockwise, rather than counter
!   clockwise. The position of the ring subparticle zero is on the y-axis
!   as it remains a line of symmetry with ether velocity, whereas the
!   X-axis does not.
!
!   In the comments on our procedures, we will frequently be using
!   abbreviated terms for the physical parameters involved. The full names
!   of these parameters and their magnitudes can be found in the program
```

! section "PROGRAM PARAMETERS".
!
! We are to base our reasoning on the assumption that space is filled
! with a vast number of Neutrino-like particles traveling in all
! directions at the velocity of light relative to what we will call a
! "Balanced Frame of Reference". We will call this our "Ether Flux".
! In 1690, Nicholas Fatio of Geneva suggested a similar possibility.
! We further assume that the elementary particles, such as the electron
! are composed of 472 subparticles forming a ring at rest that
! contracts into an ellipse with ether velocity in accordance with the
! Lorentz-Fitzgerald contraction hypothesis. We then make the critical
! assumption of "Ether Flux Interlock". That is that at all times the
! velocity of each subparticle is the same as the velocity of the
! ether flux particles along the same path.
!
! In 1915, Alfred L. Parson published an article titled " A Magneton
! Theory of the Atom". For this model it was an electrical charge that
! rotated about the ring at near the velocity of light. However, as
! mechanistic details of the model were lacking, it was soon forgotten.
!
! With a clear picture of our ring model contracting into an ellipse
! with an ether velocity in the westerly direction, the question arises
! as to how we are to make our analysis. To start we recognize that we
! know the magnitudes of the critical parameters for the subparticles

! 0, 118,236 and 354, that lie on the elliptical axes of the ring. We
! will use these theoretical values as our target values in our
! computations.
!
! One of our most difficult problems in the development of our ring
! model has been in the computation of its energy of assembly at the
! various ether velocities. We have assumed its correct magnitude to
! be the Mc2/Rho of the Special Theory of Relativity. As each sub-
! particle of the ring has a negative charge, there will be a
! repulsive force between each subparticle pairs. But with such a
! repulsive force, why doesn't the ring explode?
!
! To avoid this possibility we find that we must assume that once the
! ring has formed a tensile latching force between adjacent
! subparticles is developed that keeps the ring stable by means of
! hoop-tension. Consequently, it is only when this latching force is
! somehow reduced or eliminated that the powerful radioactive generation
! of energy takes place. Such a possibility should be of interest to
! those capable of conducting such a study.
!
! We then encounter another problem in that with our ring model at
! rest we have the energy of assembly of MC^2, plus its kinetic
! energy .5MC^2, which gives a total energy of 3/2 Mc^2, rather than
! Einstein's Mc^2. However, upon disintegration of the ring, the

! subparticles would dissipate their energy of assembly at a super-C
! velocity and then leave at the velocity C, carrying off the energy
! .5MeC^2. Under these conditions Einstein's MC^2 for the energy of a
! particle of matter at rest would actually be the available energy
! upon disintegration.
!
! As to the rest radius of our ring model of the electron, we are
! to assume that the Compton wavelength of the electron is actually
! its circumference, making the radius, Re = 3.8615905E-11 cm.
!
! We have rejected the possibility of a subparticle distribution
! based on the Keplerian equal swept area per increment of time that
! is used in Celestial Mechanics, mainly because at high velocities
! the distances between subparticles at pericentron would be too great
! to be in accord with our assumption of a latching force between
! adjacent subparticles.
!
! In its place we are to use what we term to be a "Lorentzian
! Subparticle Distribution", which is based on the Lorentz-Fitzgerald
! contraction hypothesis. (A hypothesis that was first conceived by
! Fitzgerald and later adopted by Lorentz). As under these conditions
! the distance between each adjacent subparticle pairs decreases with
! ether velocity, this problem is eliminated.
!

! There is then one feature in regard to this particular subparticle
! distribution that has done much to simplify our analysis of our data,
! and that is that there is a subpartical located at each of the four
! points where the elliptical axies intersect the ring, and these four
! subparticles maintain these positions for the full ether velocity
! range. We call them our "Cardinal Points" and have named them North,
! East, South and West. Our main interest is in the data at these four
! points as there we know the precise theoretical values of the
! critical parameters, which can serve as our "Target" values.

! Furthermore, the Lorentzian subparticle distribution has the
! advantage that the parameters of our four cardinal subparticles
! are easily specified as they invariable have the same subparticle
! numbers:
! North = 0 East = 118 South = 236 West = 354
!
! For simplicity, we have limited this study to a two-dimensional
! model with all of the action taking place in the x-y coordinate
! plane. With the value of Beta specified, we know both the subparticle
! distribution and the ether velocity. Although we find that with ether
! velocity the frequency of all cyclic devices, such as local clocks
! slow, our calculations are based on a rest clock.
!
! Our most difficult problem has been in regard to the computation

! of the energy of assembly of a ring with ether velocity. In our
! initial attempts to compute this value we found that though we got
! a good accord at zero ether velocity, we failed to get an accord
! with the classical kinetic energy of the ring at the very low ether
! velocities. In search of the cause of this discrepancy, it soon
! became apparent that we had failed to take into consideration a
! rather obscure effect that is associated with an ether velocity and
! therefore does not affect the zero ether velocity runs.
!
! Here we base our reasoning on the assumption that on the average
! the subparticles to be assembled are at rest relative to a balanced
! frame of reference. Therefore, the energy required to assemble a
! subparticle that the ring is initially receding from will be greater
! than the energy required to assemble a subparticle that the ring is
! initially approaching.
!
! To make our calculations for the various ether velocities, we then
! needed a variable that would generate the correct energy magnitudes.
! By the method of trial and error we then found that the line
! E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2
! not only gives us an accord with the classical kinetic energies at
! the very low ether velocities, but also improves our energy accord
! with the Theory of Relativity at the higher ether velocities. We
! will call this factor our "Empiricle Factor" as we have not yet been

! able to derive it mathematically.
!
! Our study is then to cover the following three properties of
! our ring model. First, we are to determine the degree of ether
! flux interlock maintained throughout the full range of ether
! velocities. Second, we are to determine if the additional energy of
! assembly is in accord with the classical kinetic energy at the
! very low ether velocities. And Third, we are to determine the energy
! of assembly of the ring for each ether velocity for comparison
! with the total energy specified by the Special Theory of Relativity,
! which is equal to MC^2/Rho. We do not enter into how this increase
! in ether velocity comes about.
!
! To facilitate the analysis of the data obtained, we will use the
! term "Factor of Accord", which means the computed value divided by
! the theoretical target value. Thus a Factor of Accord of 1.000000
! means a precise accord for that parameter and a Factor of Accord of
! 0.9028462 would mean that the computed value was about ten percent
! low.
!
! With the disclosure of the foregoing information, we are then in a
! position to explain how we arrived at 472 subparticles in the ring.
! With 360 subparticles in the ring and zero ether velocity, we
! obtained a factor of accord of 0.956 797 . Then by a series of test

```
!   runs we found that the optimum number of subparticles in the ring
!   was 472, with a Factor of Accord of 0.999 908
!
!   OPERATION: Access the data entry location by executing EDIT In.
!   ENTER the selected range of Betas for the run.
!   Power up the LaserJet and Press RUN
!   Run time for each ether velocity is about one hour.
DEG
OPTION BASE 0
DUMP DEVICE IS 10
CONTROL 10,102;1 ! Let user choose PRINTer
PRINTER IS 10
Com: COM Date_now$[16],Program$[16],N,L,Pa,Pb,Pe,Area,Class_ke,Dx,Dy,Dxl,Dx2
COM /Values1/Dy1,Dy2,Beta,Rho,Rad,Ang,A_adj,K_e(500),M_sub,Sum_t,Total_t(10)
COM /Values2/Print_all,C,Me,H,Fsc,Nu_e,Re,Mec2,Ees,E_sub,E_sub_av
COM /Values3/Sum,X_dist,Y_dist,Dist,Dist_(500),Ang_mo(500),Xo(500),Yo(500)
COM /Values4/X(500),Y(500),Ang_(500),Rad_(500),Sum_e,Last_sum_e,Sum_e_o,E_vel
COM /Values5/Kr,Beta_(10),Pr_(500),Vel(500),Vang(500),C_prime(500),E_assm(10)
COM /Values6/E_from_rest(10),Sum_e_(10),E_accord(10),Lo_vel_ke_ac(10)
!
! ================== PROGRAM PARAMETERS ======================
! ========= For the CGS (centimeter/gram/second) System =============
!
C=2.99792458E+10    ! Velocity of light  (cm/sec)
```

```
Ees=4.803242E-10    ! Electron charge (electrostatic units)
Me=9.10938975E-28   ! Mass of electron  (gm) CORRECTED 11-18-00ag
H=6.626176E-27 ! Planck's constant  (erg sec)
H_=1.0545887E-27    ! H/(2*pi)
Fsc=7.29735308E-3   ! Fine Structure Constant
Cw_e=2.4263089E-10  ! Compton Wavelength for the Electron. (Tuma 1989)
Re=3.86159055E-11   ! Cw_e/(2*PI)  OUR ELECTRON RING REST RADIUS.
! *** We are to assume that Compton's wavelength of the electron is
!  actually the circumference of our ring model of the electron at rest.
Rad=Re ! Rest radius of ring. (A general term)
Mec2=Me*C^2 ! An abbreviated term.
Kr=11.706239  ! * * * Our assumed constant for the increase of internal
! electrostatic repulsive force between subparticles, which equals
! 1/SQR(Fsc). We found that such an effect was required to obtain the
! proper energy of assembly of the ring.
!
!
Date_now$=DATE$(TIMEDATE)
!
!     L
Beta_(0)=0 ! Beta is the ether velocity expressed in units of C.
Beta_(1)=.0001
Beta_(2)=.001
Beta_(3)=.01
```

```
Beta(4)=.3
Beta_(5)=.5
Beta_(6)=.7
Beta_(7)=.9
Beta_(8)=.95
Beta_(9)=.98
!
In: FOR L=0 TO 9     ! « INPUT: ADJUST THIS VALUE FOR PROGRAM RUN RANGE
!
Print_all=0  !    INPUT:  1  Computes the Energies of Assembly and
   !     gives a full PRINTout of the data.
   !
   !    INPUT:  0  The Energies of Assembly are not
   !     computed as the prior values are used.
   !     Gives a limited PRINTout of the data,
   !       the remainder going to the monitor.
!
!   At any time that the computer is operating in the main program,
!  you can PAUSE and either set or reset Print_all to either 0 or 1.
!
!     Range=0  TO 9   !
Sum_e(0)=8.18649142458E-7     ! erg
!   ^^^^^^^^^^^^^^  Activate to enable the omission of the L=0 run.
!
```

```
!   NOTE:  RUN L=9 contains the following additional output.
!      Our findings regarding the Time Dilation factor SQR(1-Beta^2)
!      of the Special Theory of Relativity.
!      An energy data summary sheet.
!      A final data summary sheet.
!      A listing of the assumptions made in the development of our
!      ring model.
!      A note regarding the assumed increase of mass with velocity
!      of the Special Theory of Relativity.
!      A vectorial derivation of our parameter C_prime_(*), which
!      is the velocity of each interlocking ether flux particle,
!      relative to the moving frame of reference.
!
Beta=Beta_(L)
E_vel=Beta+C
Rho=SQR(1-Beta^2)  ! A simple trigonometric relationship.
M_sub=Me/472 ! Mass of a subparticle.
Last_sum_e=0
Ang=0
!
!
!  The following SUB loads the final data obtained by prior runs.
!  It is to be used for reference. Certain values are overwritten
!  by the current run. They do not change the SUB values.
```

```
CALL Load_dat(Lo_vel_ke_ac(*),Sum_e_(*),E_accord(*))
!
!HIDE PRINT "  – – – – LOADING THE X – Y COORDINATE REGISTERS   - - -"
!HIDE PRINT "     OUR SOLE COORDINATE SYSTEM"
!HIDE PRINT
!     (Using "P" to signify "Parameter".)
! – – –  Generating the longitudinal contraction coordinates – – –
E_vel=Beta*C ! Ether Velocity
IF E_vel=0 THEN E_vel=1.E-14  ! Avoids 0/0 error.
Pa=Rad ! Theoretical semimajor axis.
Pb=Rho*Rad ! Theoretical semiminor axis.
Pe=SQR(1-Pb^2/Pa^2)   ! Theoretical eccentricity of the ellipse.
Area=PI*Pa*Pb ! Theoretical area of the ellipse.
!
!  NOTE:  The first task is to generate the rest coordinates. All other
!     orbits will be a simple modification of these values.
!
! – – – -- – – First generating the Rest Ang_(*) values – – – – – –
Ang_(0)=0
Delta_ang=360/472
FOR N=L TO 473
Ang_(N)=N*Delta_ang
IF Ang_(N)=90 THEN Ang_(N)=90.000000000001   ! To avoid  n/0 error.
IF Ang_(N)=270 THEN Ang_(N)=270.000000000001   ! To avoid  n/0 error.
```

```
NEXT N
!
! – – – – – – – –  Then generating the REST Xo(*), Yo(*) Coordinates.
FOR N=0 TO 473
Xo(N)=Re*SIN(Ang_(N))
Yo(N)=Re*COS(Ang_(N))
NEXT N
! – – – – – – Then converting the above Xo(N) coordinates, in accordance
! with the Lorentzian longitudinal contraction and the shifting of the
! Y(N) coordinates so that the data is expressed in polar coordinates.
FOR N=0 TO 473
X(N)=Rho*Xo(N)
Y(N)=Yo(N)-Pa*Pe
NEXT N
!
!HIDE PRINT "**************** JUST PRIOR TO CALL Interlock_chk ***************"
CALL Interlock_chk(L,Me,C,Beta,Rho,Pa,X(*),Y(*),Rad_(*),E_vel,Vel(*),Vang(*),C_prime(*),Dist,Dist_(*),M_sub)
!HIDE PRINT
!HIDE PRINT "*********** Just prior to calling subroutine Angmo, to investigate"
!HIDE PRINT " the constancy of the angular momentum or spin of our ring model"
!HIDE PRINT " of the electron with ether velocity with"
!HIDE PRINT "     CALL Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub)"
```

```
!HIDE PRINT " The operator can at this time extend the wait time with PAUSE"
!HIDE PRINT " to check the magnitude of the various parameters involved."
!HIDE WAIT 5
!    XXXXXXXX PAUSE     !  Temp,
CALL Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub,Ang_mo(*),Print_all,Program$,Date_now$)
!
!HIDE PRINT "****** JUST PRIOR TO  CALL E_of_assm.  ***************"
! = = = = = = = = = = = =  CALL E_of assm.
IF Print_all=1 THEN
CALL E_of_assm(L,Rho,Ees,Kr,Mec2,X(*),Y(*),Ang_(*),Sum_e_(*),E_accord(*))
END IF
!
! – – – – – – – – – PRINTER OUTPUT FOR EACH VELOCITY – – – – – – –
IF Print_all=0 THEN GOTO Skip_PRINT
PRINT "   ";Program$;" ";Date_now$;" ";TIME$(TIMEDATE);" L = ";L
PRINT
PRINT "   PRECISE X – Y COORDINATES OF THE SUBPARTICLES"
PRINT "   L=";L;"    Beta=";Beta;"    Rho=";Rho
PRINT
FOR N=0 TO 472 STEP 10
PRINT "   ";N;TAB(14);"X(N)=";X(N);TAB(43);"Y(N)=";Y(N)
NEXT N
PRINT
PRINT "  Energy of assembly=";Sum_e_(L);"ergs. ";TAB(47);"= ";Sum_e_(L)/Mec2;"*MC^2"
```

```
 PRINT "   Relativistic Total Energy"; TAB(47);"= ";(1/Rho);"*MC^2"
 IF Beta<.1 THEN
 E_from_rest(L)=Sum_e_(L)-Sum_e_(0)
   PRINT "        Energy from rest=";E_from_rest(L);"ergs";TAB(47);"=
";E_from_rest(L)/Mec2;"*MC^2."
 Class_ke=.5*Me*E_vel^2
 PRINT "   Classical K. E.=";Class_ke;"ergs";TAB(47);"= ";Class_ke/Mec2;"*MC^2"
 Lo_vel_ke_ac(L)=E_from_rest(L)/Class_ke
 PRINT "   Lo_vel_ke_ac(L)=";Lo_vel_ke_ac(L)
 END IF
 PRINT CHR$(12)
 !* * * * OPTIONAL PRINTOUT OF INTERLOCK DATA * * * * * * * * * *
  PRINT  "     ";Program$;"  ";Date_now$;"  ";TIME$(TIMEDATE);"  L=";L;"  Beta=";Beta;"
Rho=";Rho
 PRINT
 PRINT "   A RUN SHOWING THE DEGREE OF ETHER FLUX INTERLOCK OBTAINED
WITH FORMULAS"
 PRINT
 PRINT
 PRINT "   C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))"
 PRINT "   Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula"
    !LIST C_prime,C_prime
    !LIST Vel,Vel
 PRINT
```

```
  PRINT   "       N";TAB(9);"Subparticle   Vel.";TAB(33);"Ether   Flux   Vel.";TAB(56);"Ratio
(Sub/E_flux)"
 PRINT
 !
 FOR N=0 TO 472 STEP 10
 PRINT "  ";N;TAB(8);Vel(N);TAB(32);C_prime(N);TAB(55);Vel(N)/C_prime(N)
 NEXT N
 PRINT
 PRINT CHR$(12)
 Skip_PRINT:   !
 ! – – – – – – – – – – – DATA ANALYSIS SHEET – – – – – – – – – – – – – – –
 PRINT "   ";Program$;" ";Date_now$;" ";TIME$(TIMEDATE);" Without a gravitational field.
L = ";L
 PRINT
 PRINT "   * * * * SIGNIFICANT ASPECTS REGARDING THIS MODEL * * * *"
 PRINT
 PRINT "   This run was made with the subparticle distribution with ether velocity"
 PRINT "   based on a Lorentzian longitudinal contraction. That is, all of the rest"
 PRINT "   X-coordinates are reduced by the factor Rho. Then, as we are working in polar"
 PRINT "   coordinates, all of the Y-coordinates must be reduced by the term (-Pa*Pe)"
 PRINT "   to place the origin of the coordinate system properly."
 PRINT
 PRINT "  * * * A CHECK OF THE VELOCITY DATA AT THE FOUR CARDINAL POINTS
* * *"
```

```
PRINT "   ( The Cardinal Points lie at the ends of the elliptical axes )"
!
IF Beta=0 THEN
PRINT
PRINT "   NOTES: At zero ether velocity relative to a balanced frame of"
PRINT "   reference, we have assumed that all of the ring subparticles"
PRINT "   travel in a common circular orbit at the velocity of light,"
PRINT "   thus giving a precise velocity interlock with the ether flux"
PRINT "   particles for each subparticle of the ring. At zero ether velocity"
PRINT "   the ring angular momentum will be equal to Me*Re*C, which is"
PRINT "   effectively equal to Planck's h_bar constant, just twice the"
PRINT "   established theoretical value."
PRINT
END IF
!
PRINT "   L=";L;"    Beta=";Beta;"    Rho=";Rho
PRINT
PRINT
PRINT "   C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))"
PRINT "   Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula"
!LIST C_prime,C_prime
!LIST Vel,Vel
PRINT
PRINT "   Subparticle N=(0)  NORTH (Up)";TAB(42);"Subparticle N=(118) EAST (Right)"
```

```
PRINT "   Vel. Formula:  (1+Beta)*C";TAB(42);"Vel. Formula:  Rho*C"
   PRINT     "            Target=                 ";(1+Beta)*C;TAB(42);"Target=
         ";C*Rho
PRINT "   C_prime(0)=";C_prime(0);TAB(42);"C_prime(118)=";C_prime(118)
PRINT "   Vel(0)= ";Vel(0);"(Theo.)";TAB(42);"Vel(118)=    ";Vel(118)
PRINT "   Vang(0)=   ";Vang(0);" (Theo.)";TAB(42);"Vang(118)=   ";Vang(118)
PRINT "   Ang_mo(0)= ";Ang_mo(0);TAB(42);"Ang_mo(118)= ";Ang_mo(118)
PRINT
PRINT "  Subparticle N=(236) SOUTH (Down)";TAB(42);"Subparticle N=(354) WEST (Left)"
PRINT "   Vel. Formula:  (1-Beta)*C";TAB(42);"Vel. Formula: Rho*C"
PRINT "   Target= ";(1-Beta)*C;TAB(42);"Target=         ";Rho*C
PRINT "   C_Prime(236)=";C_prime(236);TAB(42);"C_prime(354)=";C_prime(354)
PRINT "   Vel(236)=    ";Vel(236);TAB(42);"Vel(354)=    ";Vel(354)
PRINT "   Vang(236)=   ";Vang(236);TAB(42);"Vang(354)=   ";DROUND(Vang(354),5)
PRINT "   Ang_mo(236)= ";Ang_mo(236);TAB(42);"Ang_mo(354)= ";Ang_mo(354)
PRINT
PRINT "   CLOSURE DATA";TAB(42);"Knowing the performance of our ring "
PRINT "   Vel. Formula:  (1+Beta)*C";TAB(42);"models of the electron and t he proton,"
PRINT "   Target= ";(1+Beta)*C;TAB(42);"it appears that the finding made in"
PRINT "   C_Prime(472)=";C_prime(472);TAB(42);"contemporary physics that the angular"
PRINT "   Vel(472)=    ";Vel(472);TAB(42);"momenta of these particles is only"
PRINT "   Vang(472)=   ";Vang(472);TAB(42);"half that of Planck's h_bar constant is"
PRINT "   Ang_mo(472)= ";Ang_mo(472);TAB(42);"in error. Our calculations show that"
PRINT TAB(42);"at zero ether velocity it is"
```

```
 PRINT "   effectively equal to Planck's h_bar constant and decreases with ether"
 PRINT "   velocity by the factor (1-Beta^2). As to the law of the conservation of"
 PRINT "   angular momentum, here it is limited to the angular momentum of each of the"
 PRINT "   subparticles of the ring at a specific ether velocity."
 PRINT
 !
 IF Beta<.02 AND Beta>0 THEN
 PRINT "   LOW VELOCITY CLASSICAL KINETIC ENERGY FACTOR OF ACCORD =
";DROUND(Lo_vel_ke_ac(L),6)
 PRINT
 END IF
   PRINT "        ENERGY OF ASSEMBLY FACTOR OF ACCORD =
(Assembly/Relativistic)=";DROUND(E_accord(L),6)
 PRINT
 IF Beta=0 THEN
 PRINT "   NOTE:  The velocity of the moving frame of reference is to the WEST (Left)."
 PRINT "   The above velocities are relative to the moving frame of reference,"
 PRINT "   measured with a rest measuring rod and a rest clock."
 END IF
 PRINT CHR$(12)
 !
 IF L=9 THEN
 PRINT "   ";Program$;" ";Date_now$;" ";TIME$(TIMEDATE);" L = ";L
 PRINT
```

```
 PRINT "   * * * * * * * * PROGRAM SUMMARY SHEETS * * * * * * * * * *"
 PRINT "   _ _ _ _ Follows RUN L=9 of RingMod6e only _ _ _ _"
 PRINT
  PRINT "    REGARDING THE INCREASE IN MASS WITH VELOCITY OF SPECIAL RELATIVITY"
 PRINT
 PRINT "   Now, what do we learn from this analysis? Does the mass of"
 PRINT "   a body increase with ether velocity, as assumed in the Specia1 Theory"
 PRINT "   of Relativity? The findings of our ring model are that the"
 PRINT "   answer to this question is NO. The apparent increase in"
 PRINT "   mass with ether velocity is actually due to the additional work"
 PRINT "   required to contract the rings of matter from circular to"
 PRINT "   greater and greater ellipticity, in accordance with the Lorentz-"
 PRINT "   Fitzgerald contraction hypothesis. Thus the mass of the ring or"
 PRINT "   body remains constant with a variation of its ether velocity"
 PRINT CHR$(12)
 !
 PRINT "   ";Program$;" ";Date_now$;" ";TIME$(TIMEDATE);" L = ";L
 PRINT
 PRINT "  "
 PRINT "  REGARDING THE SO-CALLED 'TIME DILATION' OF THE SPECIAL THEORY OF RELATIVITY"
 PRINT
 PRINT "   One of the very strange assumptions of the Special Theory of Relativity"
```

```
PRINT "   was that for a system with ether velocity, the rate of time slows by the"
PRINT "   factor SQR(1-Beta^2). They called this effect 'Time Dilation'. Apparently such"
PRINT "   effect was a natural consequence of the principles upon which the theory was"
PRINT "   based and was found in the analysis of the cyclic behavior of a test particle"
PRINT "   with velocity. In any case, such an effect has no rightful place in our"
PRINT "   Neoclassical Physics and we must attempt to eliminate it."
PRINT
PRINT "   As the problem involves the cyclic behavior of a test particle with"
PRINT "   velocity, we can base our analysis on the cyclic behavior of our ring model"
PRINT "   of the electron with ether velocity. To do so we must develop programming to"
PRINT "   obtain the orbital period of the ring. As we know the distance between"
PRINT "   adjacent subparticles and the average velocity between each pair, we can"
PRINT "   compute the orbital period of the ring with a high degree of accuracy."
PRINT
PRINT "   Our findings regarding this problem become apparent in comparing the"
PRINT "   following two tables. The first is a table showing our Ratio, which is the"
PRINT "   factor of increase in orbital period relative to the rest period. This we will"
PRINT "   call our 'Cyclic Slowing' in place of 'Time Dilation'. The second table is"
PRINT "   the inverse of the relativistic time dilation factor:  1 / SQR(1-Beta^2)."
PRINT
PRINT "   Computed Ratios of     Inverse of"
PRINT "   Ring Model Periods     Relativistic"
PRINT "   At Beta / At Beta=0    Time Dilation"
PRINT
```

```
PRINT "   L    Beta Ratio      1 / SQR(1-Beta^2)"
PRINT "   0     0 1.000 000 000     1 000 000 000"
PRINT "   1    .0001   1.000 000 005     1 000 000 005"
PRINT "   2    .001    1.000 000 500     1 000 000 500"
PRINT "   3    .01     1.000 050 004     1 000 050 003"
PRINT "   4    .3 1.048 284 837     1.048 284 837"
PRINT "   5    .5 1.154 700 538     1.154 700 538"
PRINT "   6    .7 1.400 280 084     1.400 280 084"
PRINT "   7    .9 2.294 157 339     2.294 157 339"
PRINT "   8    .95     3.202 563 076     3.202 563 076"
PRINT "   9    .98     5.025 189 076     5.025 189 076"
PRINT
PRINT "   Here it becomes apparent that what was assumed to be a slowing of the"
PRINT "   rate of time was actually an increase in the orbital period of the rings of"
PRINT "   matter due to an ether velocity. According to this, we are back again to the"
PRINT "   rational Newtonian concept of absolute time, where the instant of time 'Now'"
PRINT "   is common throughout the Universe."
PRINT CHR$(12)
!
PRINT "   ";Program$;" ";Date_now$;" ";TIME$(TIMEDATE);" L = ";L
PRINT
PRINT
PRINT "   ON THE DEVELOPMENT OF OUR PARAMETER 'C_prime_(*)'."
PRINT
```

```
 PRINT "   A Vectorial determination of our parameter C_prime_(*)."
 PRINT "   which is the velocity of each interlocking ether flux particle,"
 PRINT "   relative to the moving frame of reference."
 PRINT
 PRINT "   The method by which we determined this parameter is shown in"
 PRINT "   the attached vectorial diagram."
 PRINT
 PRINT
 PRINT CHR$(12)
 END IF !
 IF L=9 THEN
 !  * * *  A PRINTOUT OF A SUMMARY OF THE ENERGY DATA OBTAINED    * * * *
 PRINT "   ";Program$;" ";Date_now$;"    ";TIME$(TIMEDATE);" L = ";L
 PRINT
 PRINT "   AN ENERGY DATA SUMMARY SHEET"
 PRINT
 PRINT "   * * *  A COMPARISON OF THE ENERGY OF ASSEMBLY ABOVE THE REST
CONDITION * * *"
  PRINT "    * * *       WITH THE CLASSICAL KINETIC ENERGY AT LOW ETHER
VELOCITIES    * * *"
 PRINT
 PRINT "   Ratio = Energy of assembly above rest condition / Classical Kinetic Energy"
 PRINT
 PRINT "   L   Beta Ratio"
```

```
 PRINT
 PRINT "   1   .0001   ";DROUND(Lo_vel_ke_ac(1),6)
 PRINT "   2   .001    ";DROUND(Lo_vel_ke_ac(2),6)
 PRINT "   3   .01     ";DROUND(Lo_vel_ke_ac(3),6)
 PRINT
 PRINT
 PRINT
 PRINT "   * * *   A TOTAL ENERGY COMPARISON FOR THE FULL VELOCITY RANGE
* * *"
 PRINT
 PRINT "   Ratio = Energy of Assembly / Relativistic Total Energy"
 PRINT
 PRINT "   L   Beta     Ratio"
 PRINT
 PRINT "   0   .0     ";DROUND(E_accord(0),6)
 PRINT "   1   .0001  ";DROUND(E_accord(1),6)
 PRINT "   2   .001   ";DROUND(E_accord(2),6)
 PRINT "   3   .01    ";DROUND(E_accord(3),6)
 PRINT "   4   .3     ";DROUND(E_accord(4),6)
 PRINT "   5   .5     ";DROUND(E_accord(5),6)
 PRINT "   6   .7     ";DROUND(E_accord(6),6)
 PRINT "   7   .9     ";DROUND(E_accord(7),6)
 PRINT "   8   .95    ";DROUND(E_accord(8),6)
 PRINT "   9   .98    ";DROUND(E_accord(9),6)
```

```
 PRINT
 PRINT CHR$(12)
 END IF
 !
 IF L=9 THEN
 PRINT "   ";Program$;" ";Date_now$;"    ";TIME$(TIMEDATE);" L = ";L
 PRINT
 PRINT "     * * * *  FINAL SUMMARY SHEET    * * * *"
 PRINT
  PRINT "  WHAT HAVE WE ACCOMPLISHED WITH OUR COMPUTER PROGRAM
RingMod6e"
  PRINT "   ON THE BEHAVIOR OF OUR RING MODEL OF THE ELECTRON WITH
ETHER VELOCITY?, BUT"
 PRINT "   WITHOUT A GRAVITATIONAL FIELD."
 PRINT
 PRINT "   To investigate the performance of our ring model of the electron with ether"
 PRINT "   velocity, but without a gravitational field, we have developed a number of"
 PRINT "   computer programs, ending with the  program RingMod6."
 PRINT
 PRINT "   We regard the accomplishments of this program to be as follows:"
 PRINT
 PRINT "   Item 1.  At the very low ether velocities, where the ring remains near"
 PRINT "   circular, we have shown that the additional energy of assembly of the ring"
 PRINT "   above the rest condition is very close to the classical kinetic energy of"
```

```
PRINT "   the ring for that velocity."
PRINT
PRINT "   Item 2. We have found that there is a precise velocity interlock between"
PRINT "   the interlocking ether flux particles and the ring subparticles or the full"
PRINT "   ether velocity range."
PRINT
PRINT "   Item 3. We have found that the Angular Momentum of both our ring electron"
PRINT "   and our ring proton to be equal to Planck's h_bar constant for the full ether"
PRINT "   velocity range. Whereas, in modern physics the assumed angular momentum for"
PRINT "   These particles is just half Planck's h_bar constant."
PRINT
PRINT "   Item 4.  Computations of the significant ring parameters at the four"
PRINT "   cardinal points shows them to be in exact accord with the theoretical values"
PRINT "   for the full ether velocity range."
PRINT
PRINT "   Item 5.  We have eliminated the 1911 erroneous concept of both Lorentz and "
PRINT "   Einstein that the mass of a body increases with ether velocity and replaced"
PRINT "   it with a demand of energy to contract the rings longitudinally in"
PRINT "   accordance with the Lorentz-Fitzgerald contraction hypothesis."
PRINT
PRINT "   Item 6. We have provided a mechanism by which it is apparent how a ring"
PRINT "   of matter at rest can possess the enormous energy of Einstein's MC^2. It is"
PRINT "   simply the energy of assembly of the ring particle of matter at rest. We"
PRINT "   compute it for our ring model of the electron at rest and obtain a factor of"
```

```
 PRINT "   accord of .999908  ."
 PRINT
 PRINT     !
 PRINT "    ON THE ASSUMPTIONS MADE IN THE DEVELOPMENT OF OUR RING
MODEL OF THE ELECTRON"
 PRINT
 PRINT "   In the development of our ring model of the electron, a number of"
 PRINT "   assumptions were made regarding both physical conditions and numerical"
 PRINT "   parameters. Following is a listing of these assumptions, usually followed by"
 PRINT "   a brief description of the manner in which they were arrived at."
 PRINT
 PRINT "   Assumption 1. We start by assuming the Space and Time of Classical Physics."
 PRINT "   That is, a three-dimensional Euclidian space and the Newtonian concept of"
 PRINT "   absolute time."
 PRINT
 PRINT "   Assumption 2. All of space is filled with the ether flux of Nicholas Fatio,"
 PRINT "   having the velocity of light relative to what we call a balanced frame of"
 PRINT "   reference, which is our rest frame of reference. The ether flux then serving"
 PRINT "   as the carriers of electromagnetic radiation."
 PRINT
 PRINT "   Assumption 3. Ring radius at rest, Re=3.86159 E-11 cm."
 PRINT "   When we first contemplated the nature of our ring model of the electron as"
 PRINT "   being composed of a number of subparticles of like charge, it became apparent"
 PRINT "   that work would be required to assemble such a ring due to the mutual"
```

```
PRINT "   repulsive force between each pair of subparticles. It also became apparent"
PRINT "   that with the ring once assembled, there would have to be some form of"
PRINT "   latching force between adjacent subparticles to keep the ring from exploding."
PRINT
PRINT "   The initial task in the development of our ring model was the determination"
PRINT "   of its radius at rest. Here the only data that we had to go on was Compton's"
PRINT "   wavelength of the electron. But there the problem was how a wavelength"
PRINT "   parameter could possibly apply to our ring model."
PRINT
PRINT "   Our solution to this problem was to recognize that Compton's wavelength was"
PRINT "   actually the circumference of our ring model. We were thereby able to"
PRINT "   establish the rest radius of our ring model as being 3.86159E-11cm."
PRINT
PRINT "   Assumption 4.  We then assume the orbit of the ring to be circular at zero"
PRINT "   ether velocity and contracted by the factor Rho in the direction of ether"
PRINT "   velocity in accordance with the Lorentz-Fitzgerald contraction hypothesis."
PRINT
PRINT "   Assumption 5.  As to the distribution of the subparticles about the ring,"
PRINT "   we initially attempted to use the Keplerian equal swept area of"
PRINT "   Celestial Mechanics, but with little success. However, we soon found that"
PRINT "   many of our problems were solved if we used, what we call a Lorentzian"
PRINT "   subparticle distribution. That is, with ether velocity the ring contracts"
PRINT "   into an ellipse, with all of the x-coordinates reduced by the factor Rho"
PRINT "   and all of the y-coordinates remaining the same. But then when we shift"
```

```
PRINT "   to polar coordinates, the Y-coordinates must be reduced by the factor (-Pa*Pe)"
PRINT "   with the origin of the coordinate system at the primary focus of the ellipse."
PRINT
PRINT "   Assumption 6.  Kr=11.706239   which is 1/(Fine Structure Constant)."
PRINT "   We use the factor Kr to increase the effective electrostatic potential of the"
PRINT "   subparticles of the ring to increase the energy of assembly. We are without"
PRINT "   an explanation of the cause of such an effect. We simply find that it works."
PRINT
PRINT "   Assumption 7.  Number of subparticles in the ring = 472."
PRINT "   The energy of assembly of the ring varies somewhat with the number of"
PRINT "   subparticles in the ring. We use 472 subparticles as a trim to obtain the"
PRINT "   best accord with Einstein's MC^2."
PRINT
PRINT "   Assumption 8.  At all times there is what we call an ether flux interlock."
PRINT "   That is that only those ether flux particles that have near the same"
PRINT "   direction and velocity as a given ring subparticle can react with it."
PRINT
PRINT "   Assumption 9.  In our calculations for the gravity free state, we have"
PRINT "   neglected the kinetic energy of the ring for the following reason. With"
PRINT "   ether flux interlock, each of the subparticles will maintain a velocity of C"
PRINT "   relative to a rest frame of reference, regardless of the ether velocity. This"
PRINT "   means that the kinetic energy of the ring, relative to a rest frame"
PRINT "   of reference, will remain at .5 MC^2 at all times. As this energy remains"
PRINT "   both constant and inaccessible, we will neglect it in our calculations."
```

```
PRINT "   However, we have found that with gravitational effects, the kinetic energy of"
PRINT "   the ring relative to the moving frame of reference to be a very important"
PRINT "   parameter."
PRINT
PRINT "   Assumption 10.  In regard to the so-called 'Time Dilation' of the Special"
PRINT "   Theory of Relativity, we have concluded that the effect is actually due to"
PRINT "   an increase in the orbital period of the rings of matter with ether velocity."
PRINT "   We were thus able to hold to the Newtonian concept of Absolute Time"
PRINT
PRINT "   Assumption 11.  In our calculations we are to compute the velocity of the"
PRINT "   subparticles of the ring Vel(*), relative to the moving frame of reference,"
PRINT "   based on a rest measuring rod and a rest clock."
PRINT
PRINT "   Assumption 12.  In our initial attempts to compute the energy of assembly of"
PRINT "   our ring model of the electron to see how well it accorded with our target"
PRINT "   value of Me*C/Rho, we found that although we obtained a good accord at zero"
PRINT "   ether velocity, the energy of assembly with ether velocity failed to show"
PRINT "   accord with our target values."
PRINT
PRINT "   Apparently the reason for this disaccord was that we were treating a"
PRINT "   dynamic model as a static model. So being unable to develop a dynamic model"
PRINT "   we then resorted to the crude method of ‘Trial and Error’. Then with a bit of"
PRINT "   luck, we finally found that we could get a satisfactory energy of assembly"
PRINT "   accord by making the electrostatic potential of the individual subparticles"
```

```
PRINT "   'E_sub' a variable, as shown in the following coding."
PRINT
PRINT "   ! Summation of the energies for the added sub-particle."
PRINT "     FOR N=0 TO —1"
PRINT "     X_dist=(X(M)-X(N))"
PRINT "     IF X_dist=0 THEN X_dist=l.E-20"
PRINT "     Y_dist=(Y(N)-Y(M))"
PRINT "     IF Y_dist=0 THEN Y_dist=1.E-20"
PRINT "     Dist=SQR(X_dist^2+Y_dist^2)"
PRINT "     E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2   ! ----- Empiricle Factor."
PRINT "     Sum_e=Sum_e+(E_sub_av^2/Dist)"
PRINT "     NEXT N"
PRINT
PRINT "   This coding not only gives us an accord with the classical kinetic"
PRINT "   energies at the very low ether velocities, but also improves our energy"
PRINT "   accord with the Theory of Relativity at the higher ether velocities. We will"
PRINT "   call this factor our Empiricle Factor as we have not yet been able to derive it"
PRINT "   mathematically."
PRINT CHR$(12)
END IF
NEXT L
PRINTER IS 1  ! USE CRT
PRINT "* * * * * * * * * * * * * FINIS * * * * * * * * * * * * * * * * * *"
End: END
```

```
   ! = = = = = = = = = = = = = = = = = = = = = = = = = = = =     E N D     O F     M A I N
================================
 !
 ! = = = = = = = = = = SUB E_of_assm = = = = = = = = = = = = = = = = = =
 SUB E_of_assm(L,Rho,Ees,Kr,Mec2,X(*),Y(*),Ang_(*),Sum_e_(*),E_accord(*))
 !   – – – – COMPUTING THE ENERGY OF ASSEMBLY OF THE RING – – – –
 !    The process is that of summing the energies of adding each
 !  subparticle, one at a time. This involves the calculation of
 !  111,156 energies and their summation. We now add the variable 'M',
 !  to designate the same 472 subparticles. The difference between the
 !  two is that the 'M' designates the subparticle that is just being
 !  added to the ring, whereas the variable 'N' designates those
 !  subparticles that have already been added to the ring. As each new
 !  'M' is added, the energies for the existing 'N's are calculated.
 !
 !HIDE PRINT "************** At E_of_assm"
 E_sub=Kr*Ees/472   ! Electrostatic potential of a single subparticle.
 Sum_e=0
 FOR M=L TO 471   ! No work for the initial sub-particle.
 !  Summation of the energies for the added sub-particle.
 FOR N=0 TO —1
 X_dist=(X(M)-X(N))
 IF X_dist=0 THEN X_dist=1.E-20
 Y_dist=(Y(N)-Y(M))
```

```
IF Y_dist=0 THEN Y_dist=1.E-20
Dist=SQR(X_dist^2+Y_dist^2)
E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2   !   < ------ Empiricle Factor.
Sum_e=Sum_e+(E_sub_av^2/Dist)
NEXT N
!HIDE PRINT "  M=";M;"  N=";N;"   ";Sum_e-Last_sum_e;"   Sum_e=";Sum_e
Last_sum_e=Sum_e
NEXT M
!
Sum_e_(L)=Sum_e
E_accord(L)=Sum_e/(Mec2/Rho)
!HIDE PRINT " E_accord(";L;")=";E_accord(L)
SUBEND   ! of E_of_assm
!
! = = = = = = =  SUB Interlock_chk = = = = = = = = = = = = = =
SUB Interlock_chk(L,Me,C,Beta,Rho,Pa,X(*),Y(*),Rad_(*),E_vel,Vel(*),Vang(*),C_prime(*),Dist
,Dist_(*),M_sub)
!HIDE PRINT "  – – – – LOADING MORE REGISTERS   about 30 seconds – – -"
!HIDE WAIT 1
!
! *  ON OUR METHOD OF COMPUTING THE SUBPARTICLE VELOCITY Vel(*) *  "
! ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^"
!   What we did to generate coding to load the array Vel(*), was to
```

```
! emulate the following equation that can be found in texts on Celestial
! Mechanics. That is:  Vel=SQR(G*M*(2/R-(1/Pa)),
! where G is the Gravitational Constant, M is the Mass of the central
! body, R is the orbital radius vector and Pa is the semimajor axis of
! the elliptical orbit.
!
!    Here the only term that is strange to our model is the G*M factor.
! Our task is then to replace the G*M factor with known parameters
! of our model to see if we get a velocity accord at the four cardinal
! points at which we know the velocity. So by the method of Trial
! and Error, we find that the formula that obtains such an accord is:
!      Vel = Rho*C*SQR(Pa*(2/R-1/Pa))
!
!    There is then the question of the dimensional accord for such a
! a modification. As the replaced M*G factor has the dimensions of L=3,
! M=0, and T=-2, and the inserted "Rho^2*C^2*Pa" has the same
! dimensions, the dimensional compatibility of the modified equation
! should be maintained.
!
!    As we have already stated, this velocity is relative to the moving
! frame of reference, based on a rest measuring rod and a rest clock.
!
 ! *  ON OUR METHOD OF COMPUTING THE SUBPARTICLE VELOCITY ANGLE
Vang(*) * *"
```

```
!    ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
!   In attempting to compute the precise velocity angle for each of the
! subparticles, using the ds/dt method, we encountered the problem that
! such a computation actually gives only the average velocity angle
! between two points, not the precise velocity angle at either end point.
! Our solution to this problem has been to first compute the average
! velocity angle between each pair of adjacent subparticles, and then
! obtain the precise velocity angles for each of the subparticles by
! taking an average of the two adjacent average velocity angles obtained.
!
Sum_t=0
FOR N=0 TO 472
!HIDE PRINT ">>>>> N=";N
Rad_(N)=SQR(X(N)^2+Y(N)^2)
IF N=0 THEN GOTO N_0
Dxl=X(N)-X(–1)
Dyl=Y(N)-Y(–1)
Dx2=X(N+1)-X(N)
Dy2=Y(N+1)-Y(N)
Dx=(Dxl+Dx2)/2
IF Dx=0 THEN Dx=1.E-30    ! Avoids: /0
Dy=(Dyl+Dy2)/2
Vang(N)=90-ATN(Dy/Dx)
IF Dx<0 THEN Vang(N)=Vang(N)+180
```

```
IF Dx>0 AND Dy>0 THEN Vang(N)=Vang(N)+360
IF Vang(N)>360 THEN Vang(N)=Vang(N)-360
Dist_(N)=SQR(Dx^2+Dy^2)
!
Vel: Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula
Delta_t=Dist_(N)/Vel(N)
Sum_t=Sum_t+Delta_t
!^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
!HIDE PRINT
!HIDE PRINT "   N=";N;"   Vel(N)=";Vel(N);"  Vang(N)=";Vang(N)
!HIDE PRINT "   Delta t=";Delta_t;"    Sum t=";Sum_t
! ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
N_0:  !
IF N=0 THEN
!HIDE PRINT " * * *  At N=0, both Vel(0) and Vang(0) are the theoretical values."
!HIDE PRINT
Vel(0)=(1+Beta)*C
Vang(0)=90
Dist_(0)=0    !  Insert of 7-18-00  ag
!HIDE PRINT "  N= 0     Vel(N)=";Vel(0);"  Vang(0)=";Vang(0)
END IF
!
C_prime: C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))
!HIDE PRINT " ";N;"  C_prime(N)=";C_prime(N)
```

```
NEXT N
Total_t(L)=Sum_t
!HIDE PRINT "  Total_t(L)=";Sum_t
SUBEND   !  of Interlock_chk
!
SUB Load_dat(Lo_vel_ke_ac(*),Sum_e_(*),E_accord(*))
!
!     This SUB is called at the start of all runs, loading the energy of
!   assembly data obtained by prior runs. This allows runs to be made
!   without the delay of computing the energies of assembly. The computed
!   values may differ, but the SUB values will remain the same until
!   changed. However, if Full_PRINT is set to 1, all of the values are
!   calculated.
!
!   Low velocity linear kinetic energy Factors of Accord.
Lo_vel_ke_ac(1)=.998056
Lo_vel_ke_ac(2)=.998025
Lo_vel_ke_ac(3)=.998109
!
!   Energies of Assembly of the ring at various ether velocities.
Sum_e_(0)=8.18649142458E-7   ! erg
Sum_e_(1)=8.18649146551E-7
Sum_e_(2)=8.18649551783E-7
Sum_e_(3)=8.18690077986E-7
```

```
Sum_e_(4)=8.58177486777E-7
Sum_e_(5)=9.45295000043E-7
Sum_e_(6)=1.14635233815E-6
Sum_e_(7)=1.87893449595E-6
Sum_e_(8)=2.62599755361E-6
Sum_e_(9)=4.13627797327E-6
!
! Factors of Accord
! with the E=Me*C^2/Rho of the Special Theory of Relativity.
E_accord(0)=.999924
E_accord(1)=.999924
E_accord(2)=.999924
E_accord(3)=.999924
E_accord(4)=.999924
E_accord(5)=.999925
E_accord(6)=.999937
E_accord(7)=1.00036
E_accord(8)=1.00153
E_accord(9)=1.00537
!
SUBEND ! of Load_dat
!
SUB Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub,Ang_mo(*),Print_all,Program$,Date_now$)
!     * * *  DATA LIMITED TO THE FOUR CARDINAL POINTS * * *
```

```
!    This subprogram relates to the computation of the angular momentum
!  or spin of our ring model of the electron with ether velocity, but
!  without a gravitational field, to see how well it accords with the
!  principle of the conservation of angular momentum. As at zero ether
!  velocity its spin is obviously equal to Me*Re*C, we have a problem
!  in that contemporary theory asserts that it is just half this value.
!
!    In considering this problem, the first thing to be recognized is that
!  angular momentum is a vectorial quantity, that is it has direction.
!  Now if the ring model has a gyratory motion, such as our assumed right-
!  angular conical bi-spin, the direction of the angular momentum vector
!  would be constantly changing. Under these conditions the average
!  angular momentum measured in one direction would be less than actual,
!  possibly one-half, which would provide a mechanism to bring the
!  angular momentum of our ring model into accord with its experimentally
!  determined value.
!
!    We first attempted to compute the angular momentum of the ring with
!  ether velocity by summing the angular momentum of each of the
!  subparticles of the ring, but soon found that such a task was too
!  involved and were in need of another method of computation. We then
!  found that the computation of the angular momentum of each of the four
!  cardinal subparticles was quite simple as the required angular momentum
!  parameters were already known. We therefore decided to base our
```

```
!  demonstration of the constancy of the angular momentum of the ring on
!  the constancy of the sum of the angular momenta of the four cardinal
!  subparticles.
!
!    Here we had to keep in mind that we had already found that all cyclic
!  phenomena, such as electron spin, slow with ether velocity by the
!  factor SQR(1-Beta^2) relative to a rest clock. It then appears that
!  with such an effect there would no longer be a precise conservation of
!  angular momentum. However, we will compute the angular momentum
!  Factors of Accord obtained by the above method and output them on the
!  data sheets.
!
!      * * *  DATA LIMITED TO THE FOUR CARDINAL POINTS * * *
 Ang_mo(0)=M_sub*Vel(0)*Y(0)
 Ang_mo(118)=M_sub*Vel(118)*ABS(X(118))
 Ang_mo(236)=M_sub*Vel(236)*ABS(Y(236))
 Ang_mo(354)=M_sub*Vel(354)*ABS(X(354))
 Ang_mo(472)=M_sub*Vel(472)*ABS(Y(472))
 Sum_ang_mo(L)=Ang_mo(0)+Ang_mo(118)+Ang_mo(236)+Ang_mo(354)
 IF Print_all=0 THEN GOTO Skipit
  PRINT  "      ";Program$;"  ";Date_now$;"    ";TIME$(TIMEDATE);"  Angular  Momentum
Calculation - L =";L
 PRINT
 PRINT "   M_sub=";M_sub
```

```
 PRINT "   Vel(0)=";Vel(0);TAB(42);"Y(0)=";Y(0)
 PRINT "   Vel(118)=";Vel(118);TAB(42);"X(118)=";X(118)
 PRINT "   Vel(236)=";Vel(236);TAB(42);"Y(236)=";Y(236)
 PRINT "   Vel(354)=";Vel(354);TAB(42);"X(354)=";X(354)
 PRINT "   Vel(472)=";Vel(472);TAB(42);"Y(472)=";Y(472)

 PRINT
 PRINT "   * * * Angular Momentum of each of the cardinal subparticles * * *"
 PRINT "   Ang_mo(0)  =";Ang_mo(0);TAB(42);"= M_sub*Vel(0)*Y(0)"
 PRINT "   Ang_mo(118)=";Ang_mo(118);TAB(42);"= M_sub*Vel(118)*X(118)"
 PRINT "   Ang_mo(236)=";Ang_mo(236);TAB(42);"= M_sub*Vel(236)*Y(236)"
 PRINT "   Ang_mo(354)=";Ang_mo(354);TAB(42);"= M_sub*Vel(354)*X(354)"
 PRINT "   Ang_mo(472)=";Ang_mo(472);TAB(42);"= M_sub*Vel(472)*Y(472)"
 PRINT
 PRINT "    * * * SUM OF THE ANGULAR MOMENTUM FOR THE FOUR CARDINAL
SUBPARTICLES * * * *"
 PRINT
 PRINT "   Sum_ang_mo(L)=";Sum_ang_mo(L)
 PRINT CHR$(12)
 Skipit: !

 SUBEND  !  of SUB Angmo
 ! - - - - - - - - - - - - - - - - -
```

RingMod6e 9 Aug 2003 13:58:55 Without a gravitational field. L = 9

* * * * SIGNIFICANT ASPECTS REGARDING THIS MODEL * * * *

This run was made with the subparticle distribution with ether velocity based on a Lorentzian longitudinal contraction. That is, all of the rest X-coordinates are reduced by the factor Rho. Then, as we are working in polar coordinates, all of the Y-coordinates must be reduced by the term (-Pa*Pe)
to place the origin of the coordinate system properly.

* * * A CHECK OF THE VELOCITY DATA AT THE FOUR CARDINAL POINTS * * *

(The Cardinal Points lie at the ends of the elliptical axes)

L= 9 Beta= .98 Rho= .198997487421
C_prime(N)=SQR©^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))
Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa)) ! Our Emulation Formula
Subparticle N=(0) NORTH (Up) Subparticle N=(118) EAST (Right)
Vel. Formula: (1+Beta)*C Vel. Formula: Rho*C
Target= 5.9358906684E+10 Target= 5.96579458899E+9
C_prime(0)= 5.9358906684E+10 C_prime(118)= 5.96579458899E+9
Vel(0)= 5.9358906684E+10 (Theo.) Vel(118)= 5.96579458899E+9
Vang(0)= 90 (Theo.) Vang(118)= 180
Ang_mo(0)= 8.84767980444E-32 Ang_mo(118)= 8.84767980443E-32
Subparticle N=(236) SOUTH (Down) Subparticle N=(354) WEST (Left)
Vel. Formula: (1-Beta)*C Vel. Formula: Rho*C
Target= 5.99584916E+8 Target= 5.96579458899E+9
C_Prime(236)= 5.99584916E+8 C_prime(354)= 5.96579458899E+9
Vel(236)= 5.99584916E+8 Vel(354)= 5.96579458899E+9
Vang(236)= 270 Vang(354)= 360
Ang_mo(236)= 8.84767980444E-32 Ang_mo(354)= 8.84767980444E-32
CLOSURE DATA Knowing the performance of our ring
Vel. Formula: (1+Beta)*C models of the electron and t he proton,
Target= 5.9358906684E+10 it appears that the finding made in
C_Prime(472)= 5.9358906684E+10 contemporary physics that the angular
Vel(472)= 5.9358906684E+10 momenta of these particles is only
Vang(472)= 90 half that of Planck's h_bar constant is

Ang_mo(472)= 8.84767980444E-32 in error. Our calculations show that at zero ether velocity it is
effectively equal to Planck's h_bar constant and decreases with ether velocity by the factor (1-Beta^2). As to the law of the conservation of angular momentum, here it is limited to the angular momentum of each of the subparticles of the ring at a specific ether velocity.
ENERGY OF ASSEMBLY FACTOR OF ACCORD = (Assembly/Relativistic)= 1.00537

RingMod6e 9 Aug 2003 13:58:55 L = 9

* * * * * * * * PROGRAM SUMMARY SHEETS * * * * * * * * * *

_ _ _ _ Follows RUN L=9 of RingMod6e only _ _ _ _

REGARDING THE INCREASE IN MASS WITH VELOCITY OF SPECIAL RELATIVITY

Now, what do we learn from this analysis? Does the mass of a body increase with ether velocity, as assumed in the Specia1 Theory of Relativity? The findings of our ring model are that the
answer to this question is NO. That the apparent increase in mass with ether velocity is actually due to the additional work required to contract the rings of matter from circular to greater and greater ellipticity, in accordance with the Lorentz- Fitzgerald contraction hypothesis. Thus the mass of the ring or body remaining constant with a variation of its ether velocity

RingMod6e 9 Aug 2003 13:58:55 L = 9

REGARDING THE SO-CALLED 'TIME DILATION' OF THE SPECIAL THEORY OF RELATIVITY

One of the very strange assumptions of the Special Theory of Relativity was that for a system with ether velocity, the rate of time slows by the factor SQR(1-Beta^2). They called this effect 'Time Dilation'. Apparently such effect was a natural consequence of the principles upon which the theory was based and was found in the analysis of the cyclic behavior of a test particle with velocity. In any case, such an effect has no rightful place in our Neoclassical Physics and we must attempt to eliminate it. As the problem involves the cyclic behavior of a test

particle with velocity, we can base our analysis on the cyclic behavior of our ring model of the electron with ether velocity. To do so we must develop programming to obtain the orbital period of the ring. As we know the distance between adjacent subparticles and the average velocity between each pair, we can compute the orbital period of the ring with a high degree of accuracy. Our findings regarding this problem become apparent in comparing the following two tables. The first is a table showing our Ratio, which is the factor of increase in orbital period relative to the rest period. This we will call our 'Cyclic Slowing' in place of 'Time Dilation'. The second table is the inverse of the relativistic time dilation factor: 1 / SQR(1-Beta^2).

Computed Ratios of Ring Model Periods At Beta / At Beta=0			Inverse of Relativistic Time Dilation
L	Beta	Ratio	1 / SQR(1-Beta^2)
0	0	1.000 000 000	1 000 000 000
1	.0001	1.000 000 005	1 000 000 005
2	.001	1.000 000 500	1 000 000 500
3	.01	1.000 050 004	1 000 050 003
4	.3	1.048 284 837	1.048 284 837
5	.5	1.154 700 538	1.154 700 538
6	.7	1.400 280 084	1.400 280 084
7	.9	2.294 157 339	2.294 157 339
8	.95	3.202 563 076	3.202 563 076
9 .	98	5.025 189 076	5.025 189 076

So here it becomes apparent that what was assumed to be a slowing of the rate of time was actually an increase in the orbital period of the rings of matter due to an ether velocity. According to this, we are back again to the rational Newtonian concept of absolute time, where the instant of time 'Now' is common throughout the Universe.

ON THE DEVELOPMENT OF OUR PARAMETER 'C_prime_(*)'.

A Vectorial determination of our parameter C_prime_(*). which is the velocity of each interlocking ether flux particle, relative to the moving frame of reference. The method by which we determined this parameter is shown in the attached vectorial diagram.

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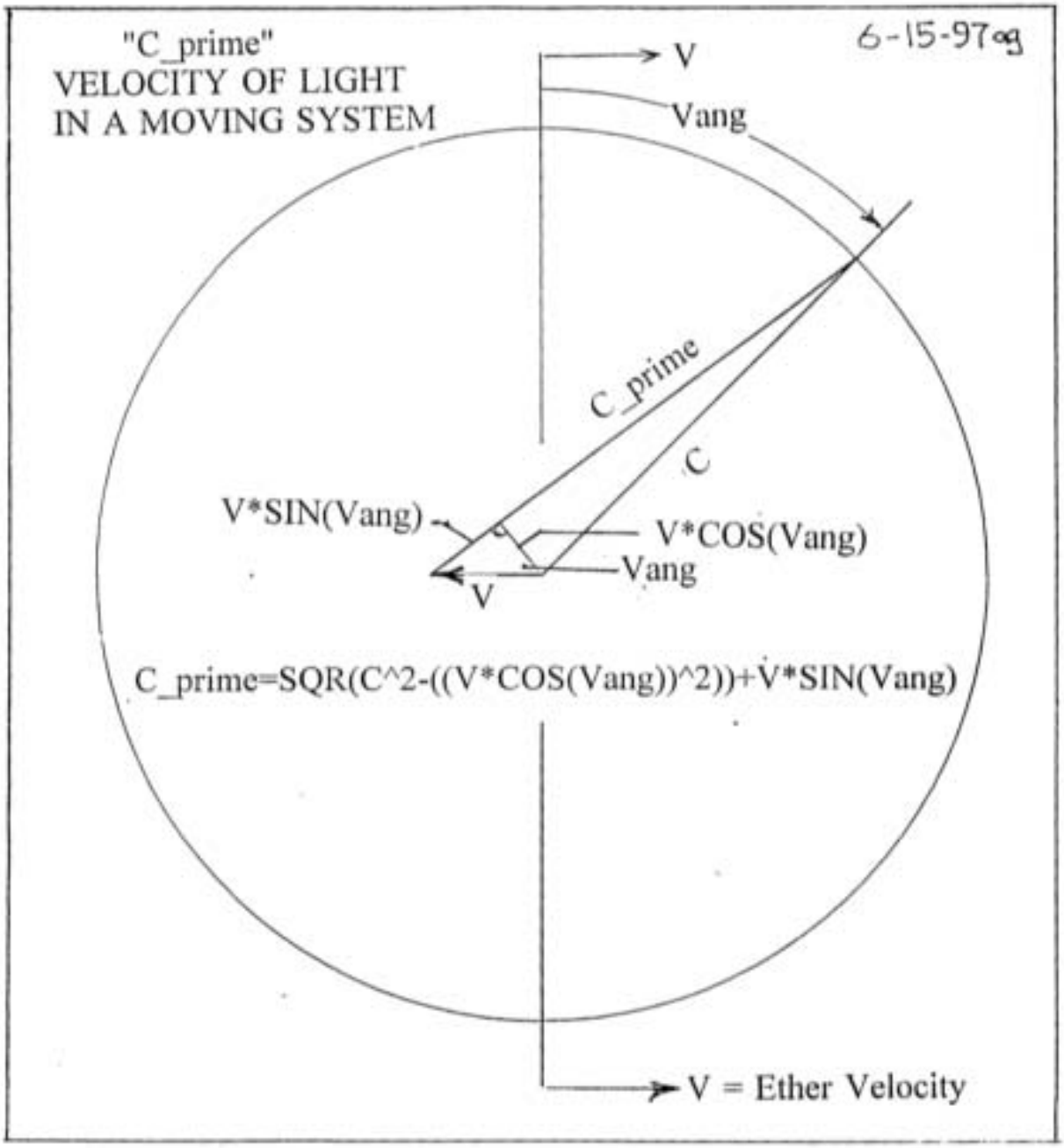

AN ENERGY DATA SUMMARY SHEET

A COMPARISON OF THE ENERGY OF ASSEMBLY ABOVE THE REST CONDITION WITH THE CLASSICAL KINETIC ENERGY AT LOW ETHER VELOCITIES

Ratio = Energy of assembly above rest condition / Classical Kinetic Energy

L	Beta	Ratio
1	.0001	.998056
2	.001	.998025
3	.01	.998109

* * * A TOTAL ENERGY COMPARISON FOR THE FULL VELOCITY RANGE * * *

Ratio = Energy of Assembly / Relativistic Total Energy

L	Beta	Ratio
0	.0	.999924
1	.0001	.999924
2	.001	.999924
3	.01	.999924
4	.3	.999924
5	.5	.999925
6	.7	.999937
7	.9	1.00036
8	.95	1.00153
9	.98	1.00537

* * * * FINAL SUMMARY SHEET * * * *

WHAT HAVE WE ACCOMPLISHED WITH OUR COMPUTER PROGRAM RingMod6e ON THE BEHAVIOR OF OUR RING MODEL OF THE ELECTRON WITH ETHER VELOCITY, BUT WITHOUT A GRAVITATIONAL FIELD?

To investigate the performance of our ring model of the electron with ether velocity, but without a gravitational field, we have developed a number of computer programs, ending with the program RingMod6. We regard the accomplishments of this program to be as follows:

Item 1. At the very low ether velocities, where the ring remains near circular, we have shown that the additional energy of assembly of the ring above the rest condition is very close to the classical kinetic energy of the ring for that velocity.

Item 2. We have found that there is a precise velocity interlock between the interlocking ether flux particles and the ring subparticles or the full ether velocity range.

Item 3. We have found that the Angular Momentum of both our ring electron and our ring proton to be equal to Planck's h_bar constant for the full ether velocity range. Whereas, in modern physics the assumed angular momentum for these particles is just half Planck's h_bar constant.

Item 4. Computations of the significant ring parameters at the fourcardinal points shows them to be in exact accord with the theoretical values for the full ether velocity range.

Item 5. We have eliminated the 1911 erroneous concept of both Lorentz and Einstein that the mass of a body increases with ether velocity and replaced it with a demand of energy to contract the rings longitudinally

in accordance with the Lorentz-Fitzgerald contraction hypothesis.

Item 6. We have provided a mechanism by which it is apparent how a ring of matter at rest can poses the enormous energy of Einstein's MC^2. It is simply the energy of assembly of the ring particle of matter at rest. We compute it for our ring model of the electron at rest and obtain a factor of accord of .999908 .

ON THE ASSUMPTIONS MADE IN THE DEVELOPMENT OF OUR RING MODEL OF THE ELECTRON

In the development of our ring model of the electron, a number of assumptions were made regarding both physical conditions and numerical parameters. Following is a listing of these assumptions, usually followed by a brief description of the manner in which they were arrived at.

Assumption 1. We start by assuming the Space and Time of Classical Physics. That is, a three-dimensional Euclidian space and the Newtonian concept of absolute time.

Assumption 2. All of space is filled with the ether flux of Nicholas Fatio, having the velocity of light relative to what we call a balanced frame of reference, which is our rest frame of reference. The ether flux then serving as the carriers of electromagnetic radiation.

Assumption 3. Ring radius at rest, Re=3.86159 E-11 cm. When we first contemplated the nature of our ring model of the electron as being composed of a number of subparticles of like charge, it became apparent that work would be required to assemble such a ring due to the mutual repulsive force between each pair of subparticles. It also became apparent that with the ring once assembled, there would have to be some form of latching force between adjacent subparticles to keep the ring from exploding.

The initial task in the development of our ring model was the determination of its radius at rest. Here the only data that we had to go on was Compton's wavelength of the electron. But there the problem was as to how a wavelength parameter could possibly apply to our ring model. Our solution to this problem was to recognize that Compton's wavelength was actually the circumference of our ring model. We were thereby able to establish the rest radius of our ring model as being 3.86159E-11cm.

Assumption 4. We then assume the orbit of the ring to be circular at zero ether velocity and contracted by the factor Rho in the direction of ether velocity in accordance with the Lorentz-Fitzgerald contraction hypothesis.

Assumption 5. As to the distribution of the subparticles about the ring, we initially attempted to use the Keplerian equal swept area of Celestial Mechanics, but with little success. However, we soon found that many of our problems were solved if we used, what we call a Lorentzian subparticle distribution. That is, with ether velocity the ring contracts into an ellipse, with all of the x-coordinates reduced by the factor Rho and all of the y-coordinates remaining the same. But then when we shift to polar coordinates, the Y-coordinates must be reduced by the factor (-Pa*Pe) with the origin of the coordinate system at the primary focus of the ellipse.

Assumption 6. Kr=11.706239 which is 1/(Fine Structure Constant). We use the factor Kr to increase the effective electrostatic potential of the subparticles of the ring to increase the energy of assembly. We are without an explanation of the cause of such an effect. We simply find that it works.

Assumption 7. Number of subparticles in the ring = 472. The energy of assembly of the ring varies somewhat with the number of subparticles in the ring. We use 472 subparticles as a trim to obtain the

best accord with Einstein's MC^2.

Assumption 8. At all times there is what we call an ether flux interlock. That is that only those ether flux particles that have near the same direction and velocity as a given ring subparticle that can react with it.

Assumption 9. In our calculations for the gravity free state, we have neglected the kinetic energy of the ring for the following reason. With ether flux interlock, each of the subparticles will maintain a velocity of C relative to a rest frame of reference, regardless of the ether velocity. This
means that the kinetic energy of the ring, relative to a rest frame of reference, will remain at .5 MC^2 at all times. As this energy remains both constant and inaccessible, we will neglect it in our calculations.
However, we have found that with gravitational effects, the kinetic energy of the ring relative to the moving frame of reference to be a very important parameter.

Assumption 10. In regard to the so-called 'Time Dilation' of the Special Theory of Relativity, we have concluded that the effect is actually due to an increase in the orbital period of the rings of matter with ether velocity. We were thus able to hold to the Newtonian concept of Absolute Time

Assumption 11. In our calculations we are to compute the velocity of the subparticles of the ring Vel(*), relative to the moving frame of reference, based on a rest measuring rod and a rest clock.

Assumption 12. In our initial attempts to compute the energy of assembly of our ring model of the electron to see how well it accorded with our target value of Me*C/Rho, we found that although we obtained a good accord at zero ether velocity, the energy of assembly with ether velocity failed to show accord with our target values. Apparently the reason for this disaccord was that we were treating a dynamic model as

a static model. So being unable to develop a dynamic model we then resorted to the crude method of 'Trial and Error. Then with a bit of luck, we finally found that we could get a satisfactory energy of assembly accord by making the electrostatic potential of the individual subparticles 'E_sub' a variable, as shown in the following coding.

```
! Summation of the energies for the added sub-particle.
FOR N=0 TO —1
X_dist=(X(M)-X(N))
IF X_dist=0 THEN X_dist=l.E-20
Y_dist=(Y(N)-Y(M))
IF Y_dist=0 THEN Y_dist=1.E-20
Dist=SQR(X_dist^2+Y_dist^2)
E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2 ! ----- Empiricle Factor.
Sum_e=Sum_e+(E_sub_av^2/Dist)
NEXT N
```

This coding not only gives us an accord with the classical kinetic energies at the very low ether velocities, but also improves our energy accord with the Theory of Relativity at the higher ether velocities. We will call this factor our Empiricle Factor as we have not yet been able to derive it mathematically.

Essay #4, by Arthur G. Gross ©2003

Ringmod6p

A Ring Model of the Proton without a Gravitational Field

The following is a program source code list for Ringmod6p, followed by a runtime printout. The program was originally developed on an HP9816 Series 200 using Rocky Mountain BASIC 2.0. The program has been converted to run on current personal computers with Windows 95 through Windows XP using HTBasic for Windows, version 9.0, available through the TransEra Corporation (www.htbasic.com). The source code is presented in landscape mode to prevent the wrapping of text lines.

```
!  Last modification 3-13-0l ag  Disk: HP 2_21_01 File: "RingMod6p"
 Program$="RingMod6p" !  Computer: HP9816 Series 200 BASIC 2.0

 !  This is a computer program relating to a ring model of the proton
 !  that we have developed in the study "In Search of a Neoclassical
 !  Physics" by A. G. Gross.

 !  The ring model of the proton without a gravitational field.
 !

 !  The following three pages, taken from our ring model of the
 !  electron without a gravitational field, also apply to our ring model
 !  of the proton.

 !  In our study of the orbital behavior of our ring model of the
 !  electron without a gravitational field, it should first be recognized
 !  that it is NOT the orbital model of Celestial Mechanics for the
 !  following reasons. First, there is no central body and there is a
 !  totally different set of forces involved. Second, the major axis is
 !  viewed as being vertical, rather  than horizontal, and third, angular
 !  measure as well as orbital motion are clockwise, rather than counter
 !  clockwise. The position of the ring subparticle zero is on the y-axis
 !  as it remains a line of symmetry with ether velocity, whereas the
 !  X-axis does not.
```

```
!   In the comments on our procedures, we will frequently be using
!   abbreviated terms for the physical parameters involved. The full names
!   of these parameters and their magnitudes can be found in the program
!   section "PROGRAM PARAMETERS".

!   We are to base our reasoning on the assumption that space is filled
!   with a vast number of Neutrino-like particles traveling in all
!   directions at the velocity of light relative to what we will call a
!   "Balanced Frame of Reference". We will call this our "Ether Flux".
!   In 1690, Nicholas Fatio of Geneva suggested a similar possibility.
!   We further assume that the elementary particles, such as the electron
!   are composed of 472 subparticles forming a ring at rest that
!   contracts into an ellipse with ether velocity in accordance with the
!   Lorentz-Fitzgerald contraction hypothesis. We then make the critical
!   assumption of "Ether Flux Interlock". That is that at all times the
!   velocity of each subparticle is the same as the velocity of the
!   ether flux particles along the same path.

!   In 1915, Alfred L. Parson published an article titled "A Magneton
!   Theory of the Atom". For this model it was an electrical charge that
!   rotated about a ring at near the velocity of light. However,
!   mechanistic details of the model were lacking and it was soon
!   forgotten.
```

! With a clear picture of our ring model contracting into an ellipse
! with ether velocity, the question arises as to how we are to make
! our analysis. To start we recognize that we know the magnitudes of
! the parameters for the subparticles 0, 118, 236 and 354, that lie on
! the elliptical axes of the ring. We will make these theoretical
! values our target values in our computations.

! One of our most difficult problems in the development of our ring
! model has been in the computation of its energy of assembly at the
! various ether velocities. We have assumed its correct magnitude to
! be the Mc2/Rho of the Special Theory of Relativity. As each sub-
! particle of the ring has a negative charge, there will be a
! repulsive force between each subparticle pairs. But with such a
! repulsive force, why does not the ring explode?

! To avoid this possibility we find that we must assume that once
! the ring is formed a tensile latching force between adjacent
! subparticles is developed that keeps the ring stable by means of
! hoop-tension. Consequently, it is only when this latching force is
! somehow reduced or eliminated that the powerful radioactive
! generation of energy takes place. Such a possibility should be of
! interest to those capable of conducting such a study.
! We then encounter another problem in that with our ring model at

! rest we have the energy of assembly of MC^2, plus its kinetic
! energy .5MC^2, which gives a total energy of 3/2 Mc^2, rather than
! Einstein's Mc^2. However, upon disintegration of the ring, the
! subparticles would dissipate their energy of assembly at a super-C
! velocity and then leave at the velocity C, carrying off the energy
! .5MC^2. Under these conditions Einstein's MC^2 for the energy of a
! particle of matter at rest would actually be the available energy
! upon disintegration.
! As to the rest radius of our ring model of the proton, we are to
! assume that the Compton wavelength of the electron is actually its
! circumference, making the radius, Rp = 2.10308936E-14 cm.

! We have rejected the possibility of a subparticle distribution
! based on the Keplerian equal swept area per increment of time that
! is used in Celestial Mechanics, mainly because at high velocities
! the distances between subparticles at pericentron would be too great
! to be in accord with our assumption of a latching force between
! adjacent subparticles.

! In its place we are to use what we term to be a "Lorentzian
! Subparticle Distribution", which is based on the Lorentz-Fitzgerald
! contraction hypothesis. (A hypothesis that was first conceived by
! Fitzgerald and later adopted by Lorentz). As under these conditions
! the distance between each adjacent subparticle pairs decreases with ether

! velocity, this problem is eliminated.
! There is then one feature in regard to this particular subparticle
! distribution that has done much to simplify our analysis of our data.
! And that is that there is a subparticle located at each of the four
! points where the elliptical axes intersect the ring, and these four
! subparticles maintain these positions for the full ether velocity
! range. We call them our "Cardinal Points" and have named them North,
! East, South and West. Our main interest is in the data at these four
! points as there we know the precise theoretical values of the
! critical parameters, which can serve as our "Target" values.

! Furthermore, the Lorentzian subparticle distribution has the
! advantage that the parameters of our four cardinal subparticles
! are easily specified as they invariable have the same subparticle
! numbers:
! North = 0 East = 118 South = 236 West = 354

! For simplicity, we have limited this study to a two-dimensional
! model with all of the action taking place in the x-y coordinate
! plane. With the value of Beta specified, we know both the subparticle
! distribution and the ether velocity. Although we find that with ether
! velocity the frequency of all cyclic devices, such as local clocks,
! slow, our calculations are based on a rest clock.

! In regard to the kinetic energy of the ring, it cannot be computed
! relative to the moving frame of reference, as that frame is not at
! rest. It must be computed relative to a rest frame of reference.
! Then as we have already assumed that with ether flux interlock, all
! subparticles have the velocity of C relative to a rest frame of
! reference, the kinetic energy of the ring remains constant at .5MC^2,
! regardless of the ether velocity.

! Our most difficult problem has been in regard to the computation
! of the energy of assembly of a ring with ether velocity. In our
! initial attempts to compute this value we found that though we got
! a good accord at zero ether velocity, we failed to get an accord
! with the classical kinetic energy of the ring at the very low ether
! velocities. In search of the cause of this discrepancy, it soon
! became apparent that we had failed to take into consideration a
! rather obscure effect is associated with an ether velocity and
! therefore does not affect tie zero ether velocity runs.

! Here we base our reasoning on the assumption that on the average
! the subparticles to be assembled are at rest relative to a balanced
! frame of reference. Therefore, the energy required to assemble a
! subparticle that the ring is initially receding from will be greater
! than the energy required to assemble a subparticle that the ring is
! initially approaching.

! To make our calculations for the various ether velocities, we then
! needed a variable that would generate the correct energy magnitudes.
! By the method of trial and error we then found that the line
! E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2
! not only gives us an accord with the classical kinetic energies at
! the very low ether velocities, but also improves our energy accord
! with the Theory of Relativity at the higher ether velocities. We
! will call this factor our "Empiricle Factor" as we have not yet been
! able to derive it mathematically.

! Our study is then to cover the following three properties of
! our ring model. First, we are to determine the degree of ether
! flux interlock maintained throughout the full range of ether
! velocities. Second, we are to determine if the additional energy of
! assembly is in accord with the classical kinetic energy at the
! very low ether velocities. And Third, we are to determine the energy
! of assembly of the ring for each ether velocity for comparison
! with the total energy specified by the Special Theory of Relativity,
! which is equal to MC^2/Rho.

! To facilitate the analysis of the data obtained, we will use the
! term "Factor of Accord", which means the computed value divided by
! the theoretical target value. Thus a Factor of Accord of 1.000000

```
!   means a precise accord for that parameter and a Factor of Accord of
!   0.9028462 would mean that the computed value was about ten percent
!   low.

!   With the disclosure of the foregoing information, we are then in a
!   position to explain how we arrived at 472 subparticles in the ring.
!   With 360 subparticles in the ring and zero ether velocity, we
!   obtained a factor of accord of 0.956 797 . Then by a series of test
!   runs we found that the optimum number of subparticles in the ring
!   was 472, with a Factor of Accord of 0.999 908 . It should be noted
!   that in going to the ring proton, the same 472 subparticles are
!   used.

!   That concludes our review of the text from our ring model of the
!   electron "RingMod6e". Our program for the proton "RingMod6p" follows.
! - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
!   OPERATION: Access the data entry location by executing EDIT In.
!   ENTER the selected range of Betas for the run.
!   Power up the LaserJet and Press RUN
!   Run time for each ether velocity is about one hour.
DEG
OPTION BASE 0
DUMP DEVICE IS 10
CONTROL 10,102;1  ! Let user choose printer
```

```
PRINTER IS 10

Com: COM Date_now$[16],Program$[16],N,L,Pa,Pb,Pe,Area,Class_ke,Dx,Dy,Dxl,Dx2
COM /Values1/Dy1,Dy2,Beta,Rho,Rad,Ang,A_adj,K_e(500),M_sub,Sum_t,Total_t(10)
COM /Values2/Print_all,C,Mp,H,Fsc,Nu_e,Rp,Mpc2,Ees,E_sub,E_sub_av
COM /Values3/Sum,X_dist,Y_dist,Dist,Dist_(500),Ang_mo(500),Xo(500),Yo(500)
COM /Values4/X(500),Y(500),Ang_(500),Rad_(500),Sum_e,Last_sum_e,Sum_e_o,E_vel
COM /Values5/Kr,Beta_(10),Pr_(500),Vel(500),Vang(500),C_prime(500),E_assm(10)
COM /Values6/E_from_rest(10),Sum_e_(10),E_accord(10),Lo_vel_ke_ac(10)

!====================== PROGRAM PARAMETERS ==========================
!========= For the CGS (centimeter/gram/second) System ============

C=2.99792458E+10    ! Velocity of light  (cm/sec)
Ees=4.803242E-10    ! Electron charge (electrostatic units)
Mp=1.6726231E-24    ! Mass of proton  (gm)
H=6.626176E-27      ! Planck's constant
H_=1.0545887E-27    ! H/(2*pi)
Fsc=7.29735308E-3   ! Fine Structure Constant
Cw_p=1.3214099E-13  ! Compton Wavelength for the Proton. (Tuma 1989)
Rp=2.10308936E-14   ! Cw_p/ (2*PI) ««< OUR PROTON RING REST RADIUS
! * * * We are to assume that Compton's wavelength of the proton is
!  actually the circumference of our ring model of the Proton at rest.
Rad=Rp ! Rest radius of ring. (A general term)
```

```
Mpc2=.00150327867   ! Mp*C^2    An abbreviated term.
Kr=11.706239  ! Our assumed constant for the increase of internal
! electrostatic repulsive force between subparticles, which equals
! 1/SQR(Fsc). We found that such an effect was required to obtain the
! proper energy of assembly of the ring.


Date_now$=DATE$(TIMEDATE)
!     L
Beta_(0)=0     ! Beta is the ether velocity expressed in units of C.
Beta_(1)=.0001
Beta_(2)=.001
Beta_(3)=.01
Beta_(4)=.3
Beta_(5)=.5
Beta_(6)=.7
Beta_(7)=.9
Beta_(8)=.95
Beta_(9)=.98

In: FOR L=0 TO 9 ! « INPUT: ADJUST THIS VALUE FOR PROGRAM RUN RANGE
Print_all=1 !    INPUT:  1  Gives a full printout of the data.
!                        0  Gives a limited printout of the data,
!      the remainder going to the monitor.
```

```
!   At any time that the computer is operating in the main program,
! you can PAUSE and either set or reset Print_all to either 0 or 1.
!
!     Range=0 TO 9   !^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
Sum_e(0)=.00150316379913    ! erg
!  ^^^^^^^^^^^^^^^^^^^^^^^^  Activate to enable the omission of the L=0 run.

Beta=Beta_(L)
E_vel=Beta*C
Rho=SQR(1-Beta^2)  ! A simple trigometric relationship.
M_sub=Mp/472 ! Mass of a subparticle.
Last_sum_e=0
Ang=0
!  The following SUB loads the final data obtained by prior runs.
!  It is to be used for reference. Certain values are overwritten
!  by the current run. They do not change the SUB values.
CALL Load_dat(Lo_vel_ke_ac(*),Sum_e_(*),E_accord(*))

!HIDE PRINT "  – – – – LOADING THE X – Y COORDINATE REGISTERS    – – -"
!HIDE PRINT "     OUR SOLE COORDINATE SYSTEM"
!HIDE PRINT
!     (Using "P" to signify "Parameter".)
! – – –  Generating the longitudinal contraction coordinates – – –
E_vel=Beta*C ! Ether Velocity
```

```
IF E_vel=0 THEN E_vel=1.E-20   ! Avoids 0/0 error.
Pa=Rad ! Theoretical semimajor axis.
Pb=Rho*Rad ! Theoretical semiminor axis.
Pe=SQR(1-Pb^2/Pa^2)   ! Theoretical eccentricity of the ellipse.
Area=PI*Pa*Pb ! Theoretical area of the ellipse.

!  NOTE:  The first task is to generate the rest coordinates. All other
!      orbits will be a simple modification of these values.

! – – – -- – – First generating the Rest Ang_(*) values – – – – – –
Ang_(0)=0
Delta_ang=360/472
FOR N=1 TO 473
Ang_(N)=N*Delta_ang
IF Ang_(N)=90 THEN Ang_(N)=90.000000000001   ! To avoid  n/0 error.
IF Ang_(N)=270 THEN Ang_(N)=270.000000000001   ! To avoid  n/0 error.
NEXT N

! – – – – – – – –  Then generating the REST Xo(*), Yo(*) Coordinates.
FOR N=0 TO 473
Xo(N)=Rp*SIN(Ang_(N))
Yo(N)=Rp*COS(Ang_(N))
NEXT N
! – – – – – Then converting the above Xo(N) coordinates, in accordance
```

```
! with the Lorentzian longitudinal contraction and the shifting of the
! Y(N) coordinates so that the data is expressed in polar coordinates.
FOR N=0 TO 473
X(N)=Rho*Xo(N)
Y(N)=Yo(N)-Pa*Pe
NEXT N

!HIDE PRINT "**************** JUST PRIOR TO CALL Interlock_chk ***************"
CALL
Interlock_chk(L,Mp,C,Beta,Rho,Pa,X(*),Y(*),Rad_(*),E_vel,Vel(*),Vang(*),C_prime(*),Dist
,Dist_(*),M_sub)
!HIDE PRINT
!HIDE PRINT "********** Just prior to calling subroutine , to investigate"
!HIDE PRINT "the constancy of the angular momentum or spin of our ring model"
!HIDE PRINT "of the proton with ether velocity with"
!HIDE PRINT "CALL Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub)"
!HIDE PRINT "The operator can at this time extend the WAIT time with PAUSE"
!HIDE PRINT "to check the magnitude of the parameters involved."
!HIDE WAIT 5
CALL Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub,Ang_mo(*),Print_all, Program$,Date_now$)

!HIDE PRINT "****** JUST PRIOR TO  CALL E_of_assm.  ***************"
! = = = = = = = = = = = =  CALL E_of assm.
IF Print_all=1 THEN CALL
```

```
E_of_assm(L,Rho,Ees,Kr,Mpc2,X(*),Y(*),Ang_(*),Sum_e_(*),E_accord(*))

 ! – – – – – – – – – PRINTER OUTPUT FOR EACH VELOCITY – – – – – – –
 IF Print_all=0 THEN GOTO Skip_print
 PRINT "   ";Program$;"    ";Date_now$;"    ";TIME$(TIMEDATE);" L =";L
 PRINT
 PRINT "    PRECISE X – Y COORDINATES OF THE SUBPARTICLES"
 PRINT "    L=";L;"    Beta=";Beta;"    Rho=";Rho
 PRINT
 FOR N=0 TO 472 STEP 10
 PRINT "   ";N;TAB(14);"X(N)=";X(N);TAB(43);"Y(N)=";Y(N)
 NEXT N
 PRINT
 PRINT "  Energy of assembly=";Sum_e_(L);"ergs. ";TAB(47);"= ";Sum_e_(L)/Mpc2;"*MC^2"
 PRINT "   Relativistic Total Energy = MC^2/Rho";TAB(47);"= ";(1/Rho);"*MC^2"
 IF Beta<.1 THEN
 E_from_rest(L)=Sum_e_(L)-Sum_e_(0)
   PRINT "        Energy from rest=";E_from_rest(L);"ergs";TAB(47);"=
";E_from_rest(L)/Mpc2;"*MC^2."
 Class_ke=.5*Mp*E_vel^2
 PRINT "   Classical K. E.=";Class_ke;"ergs";TAB(47);"= ";Class_ke/Mpc2;"*MC^2"
 !*****Lo_vel_ke_ac(L)=E_from_rest(L)/Class_ke   ! FOR SUB DATA.
 END IF
 PRINT CHR$(12)
```

```
 !* * * * OPTIONAL PRINTOUT OF INTERLOCK DATA * * * * * * * * * * *
 PRINT "    ";Program$;"    ";Date_now$;"  ";TIME$(TIMEDATE);"   L=";L;"    Beta=";Beta;"
Rho=";Rho
 PRINT "   A RUN SHOWING THE DEGREE OF ETHER FLUX INTERLOCK OBTAINED
WITH FORMULAS"
 PRINT
 PRINT "   C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))"
 PRINT "   Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula"
 !HIDE LIST C_prime,C_prime
 !HIDE LIST Vel,Vel
 PRINT
  PRINT  "       N";TAB(9);"Subparticle  Vel.";TAB(33);"Ether  Flux  Vel.";TAB(56);"Ratio
(Sub/E_flux)"
 PRINT
 !
 FOR N=0 TO 472 STEP 10
 PRINT "  ";N;TAB(8);Vel(N);TAB(32);C_Prime(N);TAB(55);Vel(N)/C_Prime(N)
 NEXT N
 PRINT
 PRINT CHR$(12)
 Skip_print:   !
 ! – – – – – – – – – – DATA ANALYSIS SHEET – – – – – – – – – – – – – – –
 PRINT "  ";Program$;" ";Date_now$;"  ";TIME$(TIMEDATE);"  Without a Gravitational Field.
L = ";L
```

```
 PRINT "   * * * * SIGNIFICANT ASPECTS REGARDING THIS MODEL * * * *"
 PRINT
 PRINT "   This run was made with the subparticle distribution with ether velocity"
 PRINT "   based on a Lorentzian longitudinal contraction. That is, all of the rest"
 PRINT "   X-coordinates are reduced by the factor Rho. Then, as we are working in polar"
 PRINT "   coordinates, all of the Y-coordinates must be reduced by the term (-Pa*Pe)"
 PRINT "   to place the origin of the coordinate system properly."
 PRINT
 PRINT "   * * * A CHECK OF THE VELOCITY DATA AT THE FOUR CARDINAL POINTS
* * *"
 PRINT "   ( The Cardinal Points lie at the ends of the elliptical axes )"

 IF Beta=0 THEN
 PRINT
 PRINT "   NOTES: At zero ether velocity relative to a balanced frame of"
 PRINT "   reference, we have assumed that all of the ring subparticles"
 PRINT "   travel in a common circular orbit at the velocity of light,"
 PRINT "   thus giving a precise velocity interlock with the ether flux"
 PRINT "   particles for each subparticle of the ring. At zero ether velocity"
 PRINT "   the ring angular momentum will be equal to Mp*Rp*C, which is"
 PRINT "   precisely equal to Planck's h_bar constant, just twice the"
 PRINT "   established theoretical value."
 PRINT
 END IF
```

```
PRINT "   L=";L;"    Beta=";Beta;"    Rho=";Rho
PRINT
PRINT "   C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))"
PRINT "   Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula"
!LIST C_prime,C_prime
!LIST Vel,Vel
PRINT
PRINT "   Subparticle N=(0)  NORTH (Up)";TAB(42);"Subparticle N=(118) EAST (Right)"
PRINT "   Vel. Formula:  (1+Beta)*C";TAB(42);"Vel. Formula:  Rho*C"
PRINT "   Target=    ";(1+Beta)*C;TAB(42);"Target=      ";C*Rho
PRINT "   C_prime(0)=";C_Prime(0);TAB(42);"C_Prime(118)=";C_prime(118)
PRINT "   Vel(0)=    ";Vel(0);"(Theo.)";TAB(42);"Vel(118)=    ";Vel(118)
PRINT "   Vang(0)=   ";Vang(0);" (Theo.)";TAB(42);"Vang(118)=   ";Vang(118)
PRINT "   Ang_mo(0)= ";Ang_mo(0);TAB(42);"Ang_mo(118)= ";Ang_mo(118)
PRINT
PRINT "  Subparticle N=(236) SOUTH (Down)";TAB(42);"Subparticle N=(354) WEST (Left)"
PRINT "   Vel. Formula:  (1-Beta)*C";TAB(42);"Vel. Formula: Rho*C"
   PRINT    "          Target=                    ";(1-Beta)*C;TAB(42);"Target=
         ";Rho*C
PRINT "   C_prime(236)=";C_prime(236);TAB(42);"C_prime(354)=";C_prime(354)
PRINT "   Vel(236)=    ";Vel(236);TAB(42);"Vel(354)=    ";Vel(354)
PRINT "   Vang(236)=   ";Vang(236);TAB(42);"Vang(354)=   ";DROUND(Vang(354),5)
PRINT "   Ang_mo(236)= ";Ang_mo(236);TAB(42);"Ang_mo(354)= ";Ang_mo(354)
PRINT
```

```
 PRINT "   CLOSURE DATA";TAB(42);"Knowing the performance of our ring"
 PRINT "   Vel. Formula:  (1+Beta)*C";TAB(42);"models of the electron and t he proton,"
 PRINT "   Target=      ";(1+Beta)*C;TAB(42);"it appears that the finding made in"
 PRINT "   C_prime(472)=";C_prime(472);TAB(42);"contemporary physics that the angular"
 PRINT "   Vel(472)=    ";Vel(472);TAB(42);"momentum of these particles is only"
 PRINT "   Vang(472)=   ";Vang(472);TAB(42);"half that of Planck's h_bar constant"
 PRINT "   Ang_mo(472)= ";Ang_mo(472);TAB(42);"is in error. Our calculations show"
 PRINT TAB(42);"that at zero ether velocity it is"
 PRINT "   effectively equal to Planck's h_bar constant and decreases with ether"
 PRINT "   velocity by the factor (1-Beta^2). As to the law of the conservation of"
 PRINT "   angular momentum, here it is limited to the angular momentum of each of the"
 PRINT "   subparticles of the ring at a specific ether velocity."
 PRINT
 IF Beta<.02 AND Beta>0 THEN
  PRINT "   LOW VELOCITY CLASSICAL KINETIC ENERGY FACTOR OF ACCORD =
";DROUND(Lo_vel_ke_ac(L),6)
 PRINT
 END IF
   PRINT "        ENERGY OF ASSEMBLY FACTOR OF ACCORD =
(Assembly/Relativistic)=";DROUND(E_accord(L),6)
 IF Beta>0 THEN
 PRINT "   NOTE:  The velocity of the moving frame of reference is to the WEST (Left)."
 PRINT "   The above velocities are relative to the moving frame of reference,"
 PRINT "   measured with a rest measuring rod and a rest clock."
```

```
 END IF
 PRINT CHR$(12)

 IF L=9 THEN
 !  * * *  A PRINTOUT OF A SUMMARY OF THE ENERGY DATA OBTAINED    * * * *"
 PRINT "   ";Program$;" ";Date_now$;"    ";TIME$(TIMEDATE);" L = ";L
 PRINT
 PRINT "   AN ENERGY DATA SUMMARY SHEET"
 PRINT
 PRINT "   * * *  A COMPARISON OF THE ENERGY OF ASSEMBLY ABOVE THE REST
CONDITION * * *"
 PRINT "    * * *       WITH THE CLASSICAL KINETIC ENERGY AT LOW ETHER
VELOCITIES.   * * *"
 PRINT
 PRINT "   Ratio = Energy of assembly above rest condition / Classical Kinetic Energy"
 PRINT
 PRINT "   L     Beta    Ratio"
 PRINT
 PRINT "   1     .0001 ";DROUND(Lo_vel_ke_ac(1),6)
 PRINT "   2     .001  ";DROUND(Lo_vel_ke_ac(2),6)
 PRINT "   3     .01   ";DROUND(Lo_vel_ke_ac(3),6)
 PRINT
 PRINT
 PRINT
```

```
 PRINT "   * * *   A TOTAL ENERGY COMPARISON FOR THE FULL VELOCITY RANGE
* * *"
 PRINT
 PRINT "   Ratio = Energy of Assembly / Relativistic Total Energy"
 PRINT
 PRINT "   L     Beta    Ratio"
 PRINT
 PRINT "   0     .0    ";DROUND(E_accord(0),6)
 PRINT "   1     .0001 ";DROUND(E_accord(1),6)
 PRINT "   2     .001  ";DROUND(E_accord(2),6)
 PRINT "   3     .01   ";DROUND(E_accord(3),6)
 PRINT "   4     .3    ";DROUND(E_accord(4),6)
 PRINT "   5     .5    ";DROUND(E_accord(5),6)
 PRINT "   6     .7    ";DROUND(E_accord(6),6)
 PRINT "   7     .9    ";DROUND(E_accord(7),6)
 PRINT "   8     .95   ";DROUND(E_accord(8),6)
 PRINT "   9     .98   ";DROUND(E_accord(9),6)
 PRINT
 PRINT CHR$(12)
 END IF

 NEXT L
 PRINTER IS 1 ! USE CRT
 PRINT "* * * * * * * * * * * * * FINIS * * * * * * * * * * * * * * * * *"
```

```
End:  END
   ! = = = = = = = = = = = = = = = = = = = = = = = = = = = =     E N D     O F     M A I N
==============================

! = = = = = = = = = = SUB E_of_assm = = = = = = = = = = = = = = = =
SUB E_of_assm(L,Rho,Ees,Kr,Mpc2,X(*),Y(*),Ang_(*),Sum_e_(*),E_accord(*))
!    – – – – COMPUTING THE ENERGY OF ASSEMBLY OF THE RING – – – –
!    The process is that of summing the energies of adding each
!  subparticle, one at a time. This involves the calculation of
!  111,156 energies and their summation. We now add the variable 'M',
!  to designate the same 472 subparticles. The difference between the
!  two is that the 'M' designates the subparticle that is just being
!  added to the ring, whereas the variable 'N' designates those
!  subparticles that have already been added to the ring. As each new
!  'M' is added, the energies for the existing 'N's are calculated.

!HIDE PRINT "************** At E_of_assm"
E_sub=Kr*Ees/472   ! Electrostatic potential of a single subparticle.
Sum_e=0
FOR M=1 TO 471   ! No work for the initial sub-particle.
!  Summation of the energies for the added sub-particle.
FOR N=0 TO —1
X_dist=(X(M)-X(N))
IF X_dist=0 THEN X_dist=1.E-20
```

```
 Y_dist=(Y(N)-Y(M))
 IF Y_dist=0 THEN Y_dist=1.E-20
 Dist=SQR(X_dist^2+Y_dist^2)
 E_sub_av=(E_sub+(E_sub/SQR(Rho)))/2   !   <------- Our Empiricle Factor.
 Sum_e=Sum_e+(E_sub_av^2/Dist)
 NEXT N
 !HIDE PRINT "  M=";M;"  N=";N;"   ";Sum_e-Last_sum_e;"   Sum_e=";Sum_a
 Last_sum_e=Sum_e
 NEXT M

 Sum_e_(L)=Sum_e
 E_accord(L)=Sum_e/(Mpc2/Rho)
 !HIDE PRINT " E_accord(";L;")=";E_accord(L)
 SUBEND   ! of E_of_assm
 ! = = = = = = =  SUB Interlock_chk = = = = = = = = = = = = =
S                                                    U                                                    B
Interlock_chk(L,Mp,C,Beta,Rho,Pa,X(*),Y(*),Rad_(*),E_vel,Vel(*),Vang(*),C_prime(*),Dist
,Dist_(*),M_sub)
 !HIDE PRINT "  – – – – LOADING MORE REGISTERS   about 30 seconds – – -"
 !HIDE WAIT 1

 ! *  ON OUR MET
 !   What we did to generate coding to load the array Vel(*), was to
 ! emulate the following equation that can be found in texts on Celestial
```

! Mechanics. That is: Vel=SQR(G*M*(2/R-(1/Pa)),
! where G is the Gravitational Constant, M is the Mass of the central
! body, R is the orbital radius vector and Pa is the semimajor axis of
! the elliptical orbit.

!   Here the only term that is strange to our model is the G*M factor.
! So our task is then to replace the G*M factor with known parameters
! of our model to see if we get a velocity accord at the four cardinal
! points at which we know the velocity. So by the method of Trial
! and Error, we find that the formula that obtains such an accord is:
!   Vel = Rho*C*SQR(Pa*(2/R-1/Pa))

!   There is then the question of the dimensional accord for such a
! a modification. As the replaced M*G factor has the dimensions of L=3,
! M=0, and T=-2, and the inserted "Rho^2*C^2*Pa" has the same
! dimensions, the dimensional compatibility of the modified equation
! should be maintained.

! * ON OUR METHOD OF COMPUTING THE SUBPARTICLE VELOCITY ANGLE Vang(*) * *"
!   In attempting to compute the precise velocity angle for each of the
! subparticles, using the ds/dt method, we encountered the problem that
! such a computation actually gives only the average velocity angle
! between two points, not the precise velocity angle at either end point.

```
! Our solution to this problem has been to first compute the average
! velocity angle between each pair of adjacent subparticles, and then
! obtain the precise velocity angles for each of the subparticles by
! taking an average of the two adjacent average velocity angles obtained.

Sum_t=0
FOR N=0 TO 472
!HIDE PRINT ">>>>> N=";N
Rad_(N)=SQR(X(N)^2+Y(N)^2)
IF N=0 THEN GOTO N_0
Dxl=X(N)-X(–1)
Dyl=Y(N)-Y(–1)
Dx2=X(N+1)-X(N)
Dy2=Y(N+1)-Y(N)
Dx=(Dxl+Dx2)/2
IF Dx=0 THEN Dx=1.E-30   ! Avoids: /0
Dy=(Dy1+Dy2)/2
Vang(N)=90-ATN(Dy/Dx)
IF Dx<0 THEN Vang(N)=Vang(N)+180
IF Dx>0 AND Dy>0 THEN Vang(N)=Vang(N)+360
IF Vang(N)>360 THEN Vang(N)=Vang(N)-360
Dist_(N)=SQR(Dx^2+Dy^2)

Vel: Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa))  ! Our Emulation Formula
```

```
Delta_t=Dist_(N)/Vel(N)
Sum_t=Sum_t+Delta_t
! ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
!HIDE PRINT
!HIDE PRINT "   N=";N;"   Vel(N)=";Vel(N);"  Vang(N)=";Vang(N)
!HIDE PRINT "   Delta_t=";Delta_t;"    Sum_t=";Sum_t
! ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
N_0:  !
IF N=0 THEN
!HIDE PRINT " * * *  At N=0, both Vel(0) and Vang(0) are the theoretical values. * * *"
!HIDE PRINT
Vel(0)=(1+Beta)*C
Vang(0)=90
Dist_(0)=0
!HIDE PRINT "  N= 0     Vel(N)=";Vel(0);"  Vang(0)=";Vang(0)
END IF

C_prime: C_prime(N)=SQR(C^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))
!HIDE PRINT " ";N;"  C_Prime(N)=";C_prime(N)
NEXT N
Total_t(L)=Sum_t
!HIDE PRINT "  Total_t(L)=";Sum_t
SUBEND   !  of Interlock_chk
SUB Load_dat(Lo_vel_ke_ac(*),Sum_e_(*),E_accord(*))
```

```
!   This SUB is called at the start of all runs, loading the data
!   obtained for prior runs. If the program generates values that differ,
!   the output data will change, but the SUB values will remain the same

Lo_vel_ke_ac(1)=.99989
Lo_vel_ke_ac(2)=.999924
Lo_vel_ke_ac(3)=.999999

!      Energies of Assembly of the ring at various ether velocities.
Sum_e(0)=.00150316379913
Sum_e(1)=.00150316380664
Sum_e(2)=.00150316455071
Sum_a(3)=.00150323896295
Sum_e(4)=.00157574382534
Sum_e(5)=.00135704772499
Sum_e(6)=.00210487649274
Sum_e(7)=.00345000827431
Sum_e(8)=.004821729181
Sum_e(9)=.00759483274344

!    Factors of Accord
!    with the E+Mp*C^2/Rho of the Special Theory of Relativity.
E_accord(0)=.999924
```

```
E_accord(1)=.999924
E_accord(2)=.999924
E_accord(3)=.999924
E_accord(4)=.999924
E_accord(5)=.999924
E_accord(6)=.999936
E_accord(7)=1.00036
E_accord(8)=1.00153
E_accord(9)=1.00537
SUBEND
SUB Angmo(L,Beta,X(*),Y(*),Vel(*),M_sub,Ang_mo(*),Print_all, Program$,Date_now$)
!     * * *  DATA LIMITED TO THE FOUR CARDINAL POINTS * * *
!    This subprogram relates to the computation of the angular momentum
!  or spin of our ring model of the proton with ether velocity, but
!  without a gravitational field, to see how well it accords with the
!  principle of the conservation of angular momentum. As at zero ether
!  velocity its spin is obviously equal to Mp*Rp*C, we have a problem
!  in that contemporary theory asserts that it is just half this value.
!
!    We first attempted to compute the angular momentum of the ring with
!  ether velocity by summing the angular momentum of each of the
!  subparticles of the ring, but soon found that such a task was too
!  involved and were in need of another method of computation. We then
!  found that the computation of the angular momentum of each of the four
```

```
!  cardinal subparticles was quite simple as the required angular momentum
!  parameters were already known. We therefore decided to base our
!  demonstration of the constancy of the angular momentum of the ring on
!  the constancy of the sum of the angular momenta of the four cardinal
!  subparticles.

!     * * *  DATA LIMITED TO THE FOUR CARDINAL POINTS * * *
 Ang_mo(0)=M_sub*Vel(0)*Y(0)
 Ang_mo(118)=M_sub*Vel(118)*ABS(X(118))
 Ang_mo(236)=M_sub*Vel(236)*ABS(Y(236))
 Ang_mo(354)=M_sub*Vel(354)*ABS(X(354))
 Ang_mo(472)=M_sub*Vel(472)*ABS(Y(472))
 Sum_ang_mo(L)=Ang_mo(0)+Ang_mo(118)+Ang_mo(236)+Ang_mo(354)
 IF Print_all=0 THEN GOTO Skipit
  PRINT  "      ";Program$;"  ";Date_now$;"    ";TIME$(TIMEDATE);"  Angular  Momentum
Calculation - L =";L
 PRINT
 PRINT "   M_sub=";M_sub
 PRINT "   Vel(0)=";Vel(0);TAB(42);"Y(0)=";Y(0)
 PRINT "   Vel(118)=";Vel(118);TAB(42);"X(118)=";X(118)
 PRINT "   Vel(236)=";Vel(236);TAB(42);"Y(236)=";Y(236)
 PRINT "   Vel(354)=";Vel(354);TAB(42);"X(354)=";X(354)
 PRINT "   Vel(472)=";Vel(472);TAB(42);"Y(472)=";Y(472)
```

```
 PRINT
 PRINT "   * * * Angular Momentum of each of the cardinal subparticles * * *"
 PRINT "   Ang_mo(0)  =";Ang_mo(0);TAB(42);"= M_sub*Vel(0)*Y(0)"
 PRINT "   Ang_mo(118)=";Ang_mo(118);TAB(42);"= M_sub*Vel(118)*X(118)"
 PRINT "   Ang_mo(236)=";Ang_mo(236);TAB(42);"= M_sub*Vel(236)*Y(236)"
 PRINT "   Ang_mo(354)=";Ang_mo(354);TAB(42);"= M_sub*Vel(354)*X(354)"
 PRINT "   Ang_mo(472)=";Ang_mo(472);TAB(42);"= M_sub*Vel(472)*Y(472)"
 PRINT
 PRINT "    * * * SUM OF THE ANGULAR MOMENTUM FOR THE FOUR CARDINAL
SUBPARTICLES * * * *"
 PRINT
 PRINT "   Sum_ang_mo(L)=";Sum_ang_mo(L)
 PRINT CHR$(12)
 Skipit: !
 SUBEND  !  of SUB Angmo
!-----------------------------------
```

RingMod6p 9 Aug 2003 17:33:36 Without a Gravitational Field. L = 9

* * * * SIGNIFICANT ASPECTS REGARDING THIS MODEL * * * *

This run was made with the subparticle distribution with ether velocity based on a Lorentzian longitudinal contraction. That is, all of the rest X-coordinates are reduced by the factor Rho. Then, as we are working in polar coordinates, all of the Y-coordinates must be reduced by the term (-Pa*Pe)
to place the origin of the coordinate system properly.

* * * A CHECK OF THE VELOCITY DATA AT THE FOUR CARDINAL POINTS * * *

(The Cardinal Points lie at the ends of the elliptical axes)

L= 9 Beta= .98 Rho= .198997487421
C_prime(N)=SQR©^2-((E_vel*COS(Vang(N)))^2))+E_vel*SIN(Vang(N))
Vel(N)=Rho*C*SQR(Pa*(2/Rad_(N)-1/Pa)) ! Our Emulation Formula
Subparticle N=(0) NORTH (Up) Subparticle N=(118) EAST (Right)
Vel. Formula: (1+Beta)*C Vel. Formula: Rho*C
Target= 5.9358906684E+10 Target= 5.96579458899E+9
C_prime(0)= 5.9358906684E+10 C_Prime(118)= 5.96579458899E+9
Vel(0)= 5.9358906684E+10 (Theo.) Vel(118)= 5.96579458899E+9
Vang(0)= 90 (Theo.) Vang(118)= 180
Ang_mo(0)= 8.8476861111E-32 Ang_mo(118)= 8.8476861111E-32
Subparticle N=(236) SOUTH (Down) Subparticle N=(354) WEST (Left)
Vel. Formula: (1-Beta)*C Vel. Formula: Rho*C
Target= 5.99584916E+8 Target= 5.96579458899E+9
C_prime(236)= 5.99667081216E+8 C_prime(354)= 5.96579458899E+9
Vel(236)= 5.99584916E+8 Vel(354)= 5.96579458899E+9
Vang(236)= 270.958117664 Vang(354)= 3.979E-13
Ang_mo(236)= 8.8476861111E-32 Ang_mo(354)= 8.8476861111E-32
CLOSURE DATA Knowing the performance of our ring
Vel. Formula: (1+Beta)*C models of the electron and t he proton,
Target= 5.9358906684E+10 it appears that the finding made in
C_prime(472)= 5.93507734421E+10 contemporary physics that the angular
Vel(472)= 5.9358906684E+10 momentum of these particles is only
Vang(472)= 90.9581176644 half that of Planck's h_bar constant
Ang_mo(472)= 8.8476861111E-32 is in error. Our calculations show

that at zero ether velocity it is effectively equal to Planck's h_bar constant and decreases with ether
velocity by the factor (1-Beta^2). As to the law of the conservation of angular momentum, here it is limited to the angular momentum of each of the subparticles of the ring at a specific ether velocity.
ENERGY OF ASSEMBLY FACTOR OF ACCORD = (Assembly/Relativistic)= 1.00537

NOTE: The velocity of the moving frame of reference is to the WEST (Left).
The above velocities are relative to the moving frame of reference,
measured with a rest measuring rod and a rest clock.

RingMod6p 9 Aug 2003 17:33:36 L = 9

AN ENERGY DATA SUMMARY SHEET

* * * A COMPARISON OF THE ENERGY OF ASSEMBLY ABOVE THE REST CONDITION * * *
* * * WITH THE CLASSICAL KINETIC ENERGY AT LOW ETHER VELOCITIES. * * *
Ratio = Energy of assembly above rest condition / Classical Kinetic Energy

L	Beta	Ratio
1	.0001	.99989
2	.001	.999924
3	.01	.999999

* * * A TOTAL ENERGY COMPARISON FOR THE FULL VELOCITY RANGE * * *

Ratio = Energy of Assembly / Relativistic Total Energy

L	Beta	Ratio
0	.0	.999924
1	.0001	.999924
2	.001	.999924
3	.01	.999924
4	.3	.999924
5	.5	.999924

6	.7	.999936
7	.9	1.00036
8	.95	1.00153
9	.98	1.00537

Essay #5, by Arthur G. Gross ©2003

Gravity

In regard to the possible mechanisms behind physical phenomena, certain of the mechanistic concepts that we have developed have proved to be quite old. The first and most important of these is the mechanism of gravitation first proposed by Nicholas Fatio De Duillier of Geneva. Fatio presented his theory before members of the Royal Society of London on the 26th of February 1690. At their request he then prepared a manuscript entitled "De la cause de la pesanteur", outlining his various arguments. The manuscript was signed by Newton, Halley, Hugens and George Cheyne as witnesses.

In regard to the fate of this manuscript, for a long time it was considered to have been lost, until in 1948, when George Gagnebin, the Genevan conservator of manuscripts, found it among his collections. In the following year it was published in the Notes and Records of the Royal Society of London, with an introduction by Gagnebin, giving much information on the little known Fatio. Both the manuscript and the publication are in the French language. It then appears that Fatio's theory failed to gain serious attention and was soon forgotten to all but a few. About a century later, the same theory was re-conceived by the Genevan philosopher George Louis LeSage, who devoted the greater part of his life advocating it. An English translation of LeSage's version of this theory, which he published in 1784, can be found in the 1898 edition of the "Annual Report of the Smithsonian Institution".

Fatio's basic concept of the mechanism of gravitation was based on the assumption of the existence of a dynamic ether flux, composed of a vast number of infinitesimal particles moving at extremely high velocities in all possible directions. He then assumed an extreme tenuity for the matter of perception, stating: "nothing prevents us from conceiving it to have a million or a million-million times more empty space than that which is

filled. He was thus able to logically give to his ether particle the penetrating power of the modern neutrino, stating,"some of them, which make up the incomparably greater part, will have passed directly through (the earth) without encountering anything." This was obviously a requisite for his system, for the gravitational force on a body is not a surface effect, but is dependent on the total mass of the system. Then, for those particles that did encounter matter, there would be a loss of velocity with a corresponding loss of intensity of the ether flux flow.

Accordingly, two bodies immersed in such an ether flux would each experience a less intense ether flux bombardment in the direction of the other body, as each would act as a protective screen for the other. The resultant effect would then be the appearance of an attractive force between the two bodies. To evaluate the possibility of such a mechanism, one should keep in mind that today it is believed that trillions of neutrinos pass through the human body each minute.

As to the nature of the ether flux particles and where they come from, we are of the opinion that they come from stellar bodies. Possibly the missing solar neutrinos are actually ether flux particles. If this were true we would then have a mechanism to explain Hubble's universal expansion.

From the basic concept of an ether flux, a number of versions of Fatio's theory can be conceived, depending on the assumptions made in regard to the details of the mechanism. The particular version that we are to present has been arrived at by a long process of elimination, but this does not necessarily mean that it is the correct version. If it is not, we at least hope to reveal the many potentialities of this theory, so that others may be encouraged to do what we are attempting to do.

As the mechanism of gravitation that we are to propose, differs greatly from the various modifications of Fatio's theory that have already been proposed, we will not burden the reader with a historical review of

the subject, but will go directly to a description of the model that we have arrived at. We can then see how well we have avoided the many objections that the prior versions were subject to.

MECHANISM OF GRAVITATION

The model of the mechanism that causes gravitational force that we are to propose, is the very same ring model of the electron that we have just been using, with the very same ether flux interlock. The only difference is that those ether flux particles that have passed through massive bodies will have a slight decrement in their normal velocity of C. As we have already stated, it is assumed that with ether flux interlock it is only those ether flux particles that have very near the same velocity and direction as a given ring subparticle that can react with it. Let us now consider this massive body to be the central body for a body in orbit about it.

Those ether flux particles passing through the orbiting body that have already passed through the central body, will no longer have a precise interlock velocity with the ring particles of matter, but will have a very slight decrement in velocity. The result is that the interlocking subparticle will have to give it a slight impulse to restore it to its proper interlock velocity. In doing so it will undergo an impulse of the same magnitude in the opposite direction, which is the direction of the central body. Thus, the central force of "attraction" on an orbiting body.

Now, with 472 subparticles in the ring and an orbiting frequency of 1.23559E+20 cycles per second, each such ring particle of matter will have the potentiality of generating 5.80727E+22 gravitational impulses per second! When we then contemplate a grain of salt in a state of free-fall, with its vast number of ring particles of matter, the potential number of gravitational interlock events per second becomes mind boggling.

ETHER FLUX PENETRATION OBJECTION

Possibly the major objection to Fatio's theory at the time of its presentation, was his assertion that there were a vast number of particles passing completely through the earth with little or no loss in velocity. However, today we give this assertion little or no thought as we are quite familiar with the amazing penetrating power of our modern neutrino. But in learning of Fatio and his theories, we should not forget that he asserted the existence of such a particle over three hundred years ago.

ETHER DRAG OBJECTION

The next objection in line then appears to be that Fatio failed to show why such an ether flux would not produce an *ether-drag* for bodies in motion. This objection we have already eliminated in the description of our ring model of the electron for uniform motion. With ether flux interlock, there is never a velocity differential between interlocking ether flux particle and ring subparticle to produce a drag force.

HEAT GENERATION OBJECTION

We then come to the objection made by one of the most outstanding thinkers of the past, James Clerk Maxwell. He asserted that such a mechanism of gravitation would generate heat sufficient to raise the temperature of the earth to a white heat in a matter of seconds. Now we can see how he would arrive at such a conclusion, for at that time there was no ring model and the gravitational force had to be generated by a very high velocity ether flux particle transpiercing a particle of matter. And for such a condition, heat would be generated. But with the ring model, the situation changes greatly. First, with ether flux interlock there is very little velocity differential between ring subparticle and ether flux particle, even under gravitational conditions. So here the gravitational force would be generated by very low velocity impacts of an elastic nature between ether flux particle and ring subparticle. Under these conditions there would be no heat generated.

GRAVITATIONAL ABERRATION OBJECTION

The final objection that we are to consider appears to be the one of greatest importance. It is quite possibly the basic reason for Newton's rejection of Fatio's theory. The objection was that the direction of the impacting force of ether flux particles should have an angle of aberration, the same as that of starlight. If this were true, then non-central forces would be generated for orbiting bodies that would destroy their observed stability.

Now how did Newton cope with this problem in his calculations? According to Cajori, (Principia, Appendix p. 637) "To be sure, in his calculations of gravitational attractions, he assumes, as a necessary approximation (having no experimental data on the speed of propagation of gravitational action) that the action is instantaneous, but not so in his talks on gravity." In other words, he was forced to assume an instantaneous propagation of gravitational forces in his calculations, but was reluctant to make such an assertion. So here it becomes apparent that what we are dealing with is a major defect in classical physics, in that it demands an instantaneous propagation of gravitational forces, which apparently rules out mechanistic solutions to the many problems involved.

Therefore, the first thing that we must do is to correct this error in our neoclassical physics, making the velocity of the propagation of gravitational forces equal to the local velocity of the propagation of light. This is an obvious relationship as the ether flux is the carrier of both. When we then add the ring structure of the elementary particles of matter and ether flux interlock, working at the level that the gravitational impulses occur, we have a mechanism that should do the job.

As to the problem of gravitational directional aberration due to a finite rate of the propagation of gravitational forces, such a system would be free of such an effect for the following reason. Here we are concerned

with the ether flux particles that are traveling radially from the center of a central body. We assume that their velocity will be slightly below the value of C, because of their passage through the central body. For these ether flux particles to react with the subparticles of a ring of matter of an orbiting body, their paths must be tangent to the orbit of that ring. When interlock then occurs, the interlocking subparticle will be given a slight impulse in the direction of the central body, along this line of tangency. Thus, the direction of the force produced by such interactions will also be in a radial direction relative to the central body, without any directional aberration of the gravitational force being involved. Another way of looking at this is that there in no transverse component of velocity at the time of the gravitational impulse. And that completes our review of the major objections to Fatio's theory that have been made in the past.

We then come to the problem of the behavior of our ring model of matter in a gravitational field. To our understanding, the General Theory of Relativity asserts that the velocity of light is unaffected by a gravitational field. However, there was a time that Einstein thought differently. That was in 1911, when he published his paper *"On the Influence of Gravitation on the Propagation of Light"* and was published in the Annales der Physik,35,1911. An English translation of this paper can be found in the book *"The Principle of Relativity"* published by Dover Publications Inc. The section of this paper with which we are concerned is titled: *"Time and the Velocity of Light in a Gravitational Field.". W*e had no difficulty in reading this paper as at that time he was still working in terms of a three-dimensional space. It is there that, by an ingenious method of analysis, he arrives at the conclusion that the velocity of light in a gravitational field will be slowed by the factor (1+Phi/C^2), where Phi is the Gravitational Potential (-GM/R). Now it is apparent that Einstein considered this slowing to be the same in all directions, as he pointed out that the velocity of light would still be C, according to a local clock.

Now to be frank, when we first read his paper we did not know that

he had dropped the concept of the slowing of the velocity of light a few years later in going to his General Theory of Relativity, and working alone there was no one to advise us of this fact. So we were working with a concept that had already been rejected by Einstein himself.

Not knowing this, we worked with great enthusiasm to get our mechanism of gravitation in accord with Einstein's paper. We made good progress for the reason that the problems involved were basically of an engineering nature. Furthermore, we were able to make our studies with a computer, using advanced software that was ideal for the problems involved. In this way we were able to use the simple numerical method of calculating, rather than the more difficult analytical method that Einstein was forced to use.

Our main effort was to then attempt to demonstrate that with the addition of Fatio's ether flux and our ring particles of matter and ether flux interlock, Einstein's model of 1911 would show an excellent accord for a wide range of parameters, leaving no need for a four-dimensional space-time curvature in the determination of these parameters. Now if this is true, then how are we to regard the General Theory of Relativity?

Our answer to that question is that we should regard the General Theory of Relativity as an ingenious heuristic device to compute the behavior of a given system under a given set of conditions, using mathematically involved entities, such as a four-dimensional curved space-time, that is comprehensible to only those that have been trained in this particular field. However, we find that Whittier and others were of the opinion that it is not space that is curved, but the four dimensional space-time geometry that is being used. As we are of the same opinion, we will work in terms of a three dimensional Euclidian space with an independent dimension in time, without regard for the so-called curvature of space.

A list of the accomplishments of the General Theory of Relativity is a long one and every day it is getting longer. There can be no doubt that

this device works, and works well. As with it we have been able to learn of many of the hidden features of our universe, ranging from the very small to the very large. But in doing so, it has denied the validity of certain of the rational concepts that were associated with classical physics, such as our simple concept of the addition of velocities and our simple concept of the simultaneity of two distant events. This is an ironic situation as for many years the physical sciences were used to teach man to think rationally, such as the fact that the occurrence of a solar eclipse does not portend disastrous coming events. We are thus led to the conclusion that though the Theory of Relativity is an essential scientific tool, it is still purely a heuristic mathematical device, based on tenets that gives us a defective view of physical reality.

What is now needed is an overriding three-dimensional *Theory of Reality* that leads to many of the same findings as the General Theory of Relativity, but does not encounter the many so-called paradoxes of that theory. A theory that can reveal certain truths that the General Theory of Relativity is blind to. If this can be accomplished, it can then be said that rational thought has proved to be our most trustworthy guide, even in the physical sciences. But let us return to our present problem.

* On Einstein's Slowing of the Velocity of Light in a Gravitational Field *

Let us first inquire into the nature of Einstein's formula for the slowing of the velocity of light in a gravitational field

$$C_ = C* (1+ (Phi / C^2))$$

We will start by explaining the nature of the parameters of this equation, using the terminology that was in use at that time. The model that we are to use in our considerations is simply a spherical body at rest in space having a mass of "M" grams. Our concern is in regard to the velocity of light at a distance of "R" centimeters from the center of this body. So here we have defined the parameters "M" and "R". The next parameter that enters in is the gravitational constant "G". This constant is used to

determine the Newtonian attraction between two bodies. Its magnitude is 6.670E-8 dyn cm^2 g^2 . We are then in a position to compute the value of the parameter Phi, which represents the parameter know as the "Gravitational Potential".

$$\text{Phi} = - G*M / R$$

We find the parameter Phi very interesting, as its magnitude is always negative. Apparently, in attempting to devise a parameter that represented the intensity of the gravitational field, the originators found that the only point that could serve as a fixed reference point was a point at an infinite distance from the body, where the gravitational intensity would be zero. The parameter Phi was then apparently defined as the work required to move a unit mass particle from the point under consideration, to an infinite distance from the body. As it was work being done, the parameter had to have a negative sign. It was in this manner that Einstein's paper of 1911 showed the velocity of light to be slowed in all directions in accordance with the above formula.

It then appears that with the coming of General Relativity in 1915, Einstein's paper of 1911 was near forgotten, for our search of the literature revealed only one reference to this finding, and that was in the book titled: "*Gravitational Curvature*" by Theodore Frankel, published in 1979. There, on page 90, he makes the following comment in regard to a formula that he had just developed. *"This was first done by Einstein in 1911, but his analysis was incorrect since he was still working in the context of a flat Minkowsky space"* From this we conclude that although Einstein's 1911 findings were invalid for a four-dimensional curved space-time, they are still valid for a three-dimensional Euclidean space. We will therefore make Einstein's slowing of light in a gravitational field an essential part of our neoclassical physics. But here we encounter a problem regarding the nature of this slowing. Is it *isotropic* or *anisotropic?* That is, is it equal in all directions, or not? Einstein must have considered it to be isotropic as he pointed out that this reduced

velocity would still be C according to a local clock.

However, if we accept Einstein's 1911 formula for the slowing of the velocity of light in a gravitational field, we not only encounter this slowing in the various gravitational fields, but we also find that the universal constant for the velocity of light 'C' appears to be defective. This value has been set at 2.99792458E+10 centimeters per second, which was determined by many highly accurate experiments conducted on the surface of the earth. But the problem here is that the velocity of light on the surface of the earth has been slowed by the gravitational potential of both the earth and the sun. To determine the magnitudes involved in this problem, we will base our reasoning on Einstein's formula for the velocity of light in a gravitational field and calculate the slowing caused by the gravitational potentials of both the earth and the sun. We will then modify the value of C accordingly and call it Cc to represent the cosmic velocity of light in gravity free space.

* * * Einstein's Principle of Equivalence * * *

Einstein's principle of equivalence has proven to be a powerful tool in solving problems involving gravitational fields. It can be explained quite simply as follows. We will consider two systems, one in a gravitational field and the other in an accelerative field. For the system in a gravitational field we will assume a gravitational intensity of the Earth's 1 g, and will thereby be able to compute various rest parameters of the system. Let us then replace the gravitational field of this system with an accelerative field of the same 1 g magnitude. Under these conditions the gravitational force on each particle of matter will be replaced by an accelerative force of the same magnitude and direction. Under these conditions, the accelerative system as a whole should behave the same as the gravitational system. It can then be said that the systems are equivalent. This relationship has the advantage that if you can determine the formula for a given parameter in one of the systems, you then know the value of the same parameter in the other system, as they are the same.

Going now to the models that Einstein uses in his paper, there are two. The first is in a uniform gravitational field and the second is in a space free of gravitation, but with a 1g vertical acceleration. He then states: "To avoid unnecessary complications, let us for the present disregard the theory of relativity, and regard both systems from the customary point of view of kinematics, and the movements occurring in them from that of ordinary mechanics." So here it becomes perfectly clear that he was working in terms of classical physics.

He then proceeds to develop the various formulas for the two systems, using his principle of equivalence. Now, the point of significance that we want to stress here is that, although his thoughts were on his theory of relativity, the findings that he arrived at should be equally valid in classical physics and should therefore be a valid part of our neoclassical physics.

With the value of the gravitational potential Phi known, we are then able to compute the velocity of light at point R with Einstein's equation,

$$C' = C *(1 + Phi / C^2)$$

Now this procedure is so very simple, we cannot see how we could be making an error. Furthermore, we cannot see why it would not be a valid procedure in calculating the behavior of our ring model in a gravitational field. Then, knowing the velocity of the ring subparticles, we would be able to calculate the kinetic energy of the ring to determine how much it deviated from the gravity-free condition of .5MC^2. Here the kinetic energy would be relative to the moving frame of reference. But, before getting into that, let us first consider the final section of Einstein's paper, which is titled *"Bending of Light-Rays in the Gravitational Field"*.

ON THE DEFLECTION OF STARLIGHT BY THE SUN

A precise knowledge of the mechanism of the bending of starlight as it passes the sun is of importance as it now serves as one of the three major tests supporting the General Theory of Relativity. In 1911, Einstein

was still working in terms of what is effectively the classical concepts of space and time and had arrived at the conclusion that, based on his finding of the slowing of the velocity of light in a gravitational field, the bending of starlight would be about .85 arc seconds. His revolutionary concepts relating to a four dimensional curved space-time were yet to come. So, if we are to retain the classical concepts of space and time, it is here that we must take our stand. Therefore, it is our intent to demonstrate that in taking all of the effects known at the present time, holding to the classical concepts of space and time, the known deflection of starlight of 1.7 arc seconds will be obtained. Although the value of the deflection determined by Einstein in 1911 proved to be only about half the actual value, we find it to be an essential part of the puzzle.

In 1911, shortly after Einstein's paper was published, he apparently became dissatisfied with the findings reported in that paper and decided to investigate the possibilities of a four-dimensional curved space-time geometry. It is there that he found that the deflection of starlight would be about 1.5 arc seconds, which is just about twice the value reported in his 1911 paper. As is well-known, the subsequent measurement of the deflection of starlight during an eclipse were in accord with this later value. The use of a four-dimensional curved space-time brought about the advance from the Special Theory of Relativity to the General Theory of Relativity, which was published in 1915. It is here that a four-dimensional curved space-time was established in our concept of physical reality as it was thought to be requisite to obtain accord with the know deflection of starlight by the sun.

However, it was then in 1921, six years later, that the German scientist Philipp Leonard found and had re-published a paper on the deflection of starlight by the sun, written by Johann Georg Soldner in 1801. Here a new effect was introduced. In this paper Solder considers the possibility that the particles of light have a gravitational mass and will therefore be deflected in a path close to the sun. To determine the value of such a deflection, he assumed Newtonian gravity and a Keplerian

conical orbit, which in this case is a hyperbola. His findings were that the deflection would be about .85 arc seconds.

Now here it becomes apparent that there are two possible ways that the apparent direction of a starlight source of light can be deflected. The first is where the photons are deflected from a linear path due to a gravitational free-fall, which is the mechanism of the Soldner deflection. The second is where there is a variation in the velocity of the light across the beam, altering the angle of the wave front, which is the mechanism of the Einstein deflection. As these two effects act independently, it is apparent that they should be additive, thus giving the observed 1.7 arc seconds deflection of starlight by the sun, without the use of a four-dimensional space-time curvature. Under these conditions we can see no need for the use of a four-dimensional space-time curvature to obtain an accord with the known deflection of starlight coming from the sun. In our Neoclassical Physics, our space remains Euclidian and our time remains that of the Newtonian concept of absolute time.

Gravitational Red-shift

The second of the classical tests for the Theory of Relativity related to the gravitational red-shift of the light coming from the sun, but it is now recognized that this test is actually a test of Einstein's principle of equivalence, rather than a test of the Theory of Relativity. However, we have made a finding that relates to the gravitational red-shift that we will relate at this time.

Ring Kinetic Energy in a Gravitational Field

Let us now return to consider the problem of the variation in the kinetic energy of our ring model in a gravitational field as this field varies in intensity due to distance from the central body. Without a gravitational field we had no problem as its kinetic energy remained at .5 MC^2 at all times and we were therefore able to neglect it in our considerations. But

with Einstein's 1911 slowing of the velocity of light in a gravitational field, the problem is back, for this means that there will also be a slowing of the interlocking ether flux particles, with an associated reduction in the ring's kinetic energy.

Assuming a ring model at a great distance from a massive body, this ring will have its full kinetic energy of .5*MC^2. Now, start lowering the ring into the gravitational field of the body. As you lower the ring you will be withdrawing energy. At the same time the kinetic energy of the ring will be decreased by the same amount due to the slowing of the velocity of the interlocking ether flux particles. It is a simple process of withdrawing kinetic energy from the ring. For such a mechanism it then follows that the diameter of the rings of matter in a gravitational field must remain constant, regardless of the gravitational potential or ring orientation. It is only the rate of spin that would vary with gravitational potential.

However, it soon became apparent that Einstein's concept of a general slowing of the velocity of light in a gravitational field must be rejected as our theory of gravitation requires the velocity of the outgoing ether flux particles to be less than that of the incoming ether flux particles. But when Einstein used it to compute an essential component of the deflection of starlight by the sun, it worked, what were we doing that was wrong?

Reviewing the situation it soon became apparent that we had encountered an ambiguity. We had erroneously used his formula for the slowing of the velocity of light in a gravitational field in both the transverse and the vertical directions, whereas in computing the bending of starlight he had used it in the transverse direction alone. We will therefore do the same and call it Einstein's *transverse* slowing of the velocity of light in a gravitational field, to indicate that this slowing is in the transverse direction only.

Computing the value of Cc, the cosmic velocity of light in free space.

What we would now like to know is that if gravitational fields slow the velocity of light in accordance with Einstein's transverse slowing of light in a gravitational field, what would be the velocity of light in a gravity-free field? We will call this velocity the Cosmic velocity of light and give it the symbol Cc.

Our procedure in computing the value of Cc will be to first calculate the slowing of the velocity of light at the surface of the earth due to the mass of the earth, and then compute the slowing of the velocity of light at the surface of the earth due to the mass of the sun. We will then alter the value of C accordingly to obtain the value of Cc.

	* * * Parameters Involved * * *
C=2.9979245800E+10	Velocity of light, surface of earth. (cm/sec)
G=6.670E-8	Gravitational constant.
Au=1.495978707E+13	Astronomical Unit Earth to Sun (cm)
M_sun=1.989E+33	Mass of sun (gm)
R_sun=6.960E+10	Radius of Sun (cm)
M_earth=5.975E+27	Mass of Earth (gm)
R_earth=6.371229E+8	Radius of Earth (cm)

Calculating the slowing of the horizontal velocity of light at the surface of the earth due to the mass of the earth, we are to use the term "Delta_v" to designate a change in velocity.

Gravitational potential at the surface of the earth due to mass of earth.
Phi_ee=-G*M_earth/R_earth = -6.25519032513E+11.
Delta_v_ee=(C*(Phi_ee/C^2) = -21 cm/sec.
G47:

Calculating the slowing of the horizontal velocity of light at the surface of the earth due to the mass of the sun.

Gravitational potential at the surface of the earth due to the mass of sun.
Phi_es=-G*M_sun/Au = -G*M_sun/Au= -8.86819440539E+12
Delta_v_es=C*(Phi_es/C^2)= 0 to -295.811124288 cm/sec. maximum.

Now according to our reasoning, at the time that the value of C was determined, there were two hidden effects that were slowing the velocity of light. The first being a slowing of 21 cm/sec due to the mass of the earth, and the other being a slowing that ranged from zero to 296 cm/sec due to the mass of the sun, with the magnitude of the latter being dependent on the direction of the path of measurement. Without these effects they would have obtained the Cosmic velocity Cc. Our problem then was to determine a way to alter the value of C to get Cc. The procedure that we arrived at was based on the assumption that the value of C was based on a large number of experimental readings taken throughout the day, with each having its own Delta_v error. To approximate an average Delta_v we assumed it to be just half of the maximum Delta_v_es value shown above. We thereby found the cosmic velocity of light to be as follows.

Cosmic Velocity of Light

Cc = C - (Delta_v_es/2)-(Delta_v_ee) = 2.99792459689E+10

Compared to C = 2.99792458E+10

Here the additional digits for Cc only indicate the change from C, not an increase in accuracy. But this is only a change in the ninth digit of C. from an 8 to a 9. Certainly such a change would not be of significance in the normal calculations involving the velocity of C. But for precision in our terminology, we feel that the proper term should be used. However, there is one place that it could be of significance, and that is in the fringe shift produced by a Michelson interferometer, such as those used in the Michelson-Morley Experiment.

* * * The Michelson-Morley Experiment * * *

As we have already described the nature of the Michelson-Morley experiment and its findings, we will limit our considerations here to those

aspects that are of concern to our current problem. The big problem at that time was that the Michelson interferometer failed to show a fringe shift, even though the earth is known to have an orbital velocity of some 30 kilometers per second in its orbit about the sun.

The solution to this problem is now known as the Lorentz-Fitzgerald contraction hypothesis, which postulates a contraction of physical structure in the direction of ether velocity by the factor Rho. As to the magnitude of the factor Rho, it is simply based on the magnitude of the lengths of the sides of a right triangle being Rho and V/C, with a hypotenuse of C/C, which is 1. Thus: Rho = SQR(1-(V/C)^2). With such a compensating effect, the computed fringe shift of a Michelson Interferometer with ether velocity would be zero.

The Lorentz-Fitzgerald contraction hypothesis has become a prime feature of our ring model, for it is there that our ring model contracts in the direction of its ether velocity in a manner as to give a precise interlock between the ether flux particles and the subparticles of the ring. We thus find the Lorentz-Fitzgerald contraction to be a natural consequence of the assumption of a ring structure of matter with an ether flux interlock at the velocity of C.

But back to our problem regarding Einstein's concept of a transverse slowing of the velocity of light in a gravitational field. If we were to assume this slowing to be equal in all directions, as apparently Einstein did in 1911, its effect would be self-compensating and there would be no problem regarding the zero fringe shift of a Michelson interferometer. But in probing the possibilities of such a slowing, we were surprised to find that if this slowing was in the transverse direction only, then the spin kinetic energy of the rings of matter, relative to the moving frame of reference, would be equal to but of opposite sign to their gravitational potential energy at all orbital radii. Recall that the gravitational potential 'Phi' is the work required to move unit mass out of the gravitational field. We considered this to mean that we had found a possible source of

gravitational energy. As we did not want to lose this remarkable feature we continued to work in terms of Einstein's slowing of the velocity of light, but in the transverse direction only, which meant that we still had the problem of the reaction of a Michelson interferometer in a gravitational field. Would it still show its known zero fringe shift under these conditions?

** ON THE FRINGE SHIFT OF A MICHELSON INTERFEROMETER IN A GRAVITATIONAL FIELD.

Here our initial problem is in regard to eccentricity of the rings of matter in a gravitational field alone. In our program for our ring model with ether velocity we have assumed that the rings of matter contract in the direction of the ether velocity by the factor Rho in accordance with the Lorentz-Fitzgerald hypothesis, thus giving a zero fringe shift for a Michelson interferometer. Now to maintain this accord where there is also a gravitational field, we must then assume that a gravitational field does not alter the eccentricity of the rings of matter. It then follows that the rings of matter in a gravitational field without an ether velocity remain circular, giving a constant interferometer arm length.

To compute the fringe shift of a Michelson interferometer in a gravitational field, we must determine the velocity of light in the following directions.

C_e_s The velocity of the light going from the earth to the sun.
C_trans The velocity of the light that is transverse to a line to the sun.
This is a two-way velocity.
C_s_e The velocity of the light coming from the sun.

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Velocity of light going to the Sun (C_e_s) = Cosmic Velocity
Cc=2.99792459689E+10

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TRANSVERSE SLOWING EINSTEIN'S 1911 TWO-WAY G OF THE VELOCITY OF LIGHT IN A GRAVITATIONAL FIELD (C_trans)

Gravitational potential of the sun at the earth.

Phi_s_e=	-G*M_sun/Au = -8.87209531409E+12	
Delta_v_trans=	Cc*(Phi_s_e/Cc^2)	Transverse slowing of light.
Delta_v_trans=	-295.941242927	
C_trans=	Cc*(1+(Phi_s_e/Cc^2))	Einsteins 1911 formula.
C_trans=	2.99792456731E+10	

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VELOCITY OF THE LIGHT COMING FROM THE SUN (C_s_e)

Here it is apparent that as we have already assumed that gravitational forces are caused by a slowing of the ether flux particles transpiercing a central body, there will be a slowing of the velocity of light coming from the sun. As far as the magnitude of this slowing is concerned, we know that it is such as to give a zero fringe shift for a Michelson interferometer. We can then obtain this accord by assuming a slowing of the one-way velocity of light coming from the sun to be just twice Einstein's two-way transverse slowing of the velocity of light.

We already know Einstein's two-way transverse velocity to be 2.99792456731E+10 . Under these conditions the average two-way velocity along a path to the sun will be (C_s_e+Cc)/2 = 2.99792456731E+10, exactly the same. Under these conditions the Michelson interferometer would show a zero fringe shift. This would mean that the formula for the velocity of light radiating from a massive body would be:

C_rad=Cc*(1+(2*Phi/Cc^2))

Here the gravitational potential Phi is determined by the radial distance

from the central body using the formula Phi = -G*M/Rad .

RING KINETIC ENERGY

We then have the problem of determining the ring kinetic energy for this new configuration. Here we are concerned with the kinetic energy relative to the moving frame of reference. We know that the increments of kinetic energy for the two transverse subparticles to be correct as their velocity is Einstein's transverse velocity C_trans = Cc * (1 + (Phi / Cc^2)). But what about the kinetic energies of the incoming and outgoing subparticles? Here we must take an average of the two velocities.

C_in = Cc
C_out =Cc * (1 +2 * (Phi/Cc^2))
C_av = Cc * (1 + (Phi / Cc^2))

which means that the average kinetic energy of the incoming and outgoing subparticles is the same as that of the transverse subparticles, which brings it into accord with Einstein's formula for the transverse slowing of the velocity of light in a gravitational field. It also simplifies the process of computing spin kinetic energies, as only Einstein's formula for the transverse velocity of light is needed. The kinetic energy of the ring relative to the moving frame of reference thereby becomes:

Ke = .5 * Me * C_av^2

GRAVITATIONAL POTENTIAL 'Phi'

The gravitational potential of the ring is computed with the formula

Phi = - G * Me * Rad

where 'Rad' is the distance of the ring from the central body. It specifies the work required to displace a unit mass particle out of the gravitational field.

ON THE RELATIONSHIP BETWEEN THE RING KINETIC ENERGY AND THE GRAVITATIONAL POTENTIAL DUE TO THE MASS OF THE SUN AT VARIOUS RADII.

What we are attempting to demonstrate is that in a gravitational field at zero ether velocity, the ring model kinetic energy is equal to but of opposite sign to its gravitational potential energy 'Phi' at all orbital radii. Our model is the Solar System with the Sun located at the origin of the coordinate system. However, in place of each of the planets, we will have a single ring electron with its spin axis perpendicular to the direction to the Sun. Here the mean distance of each of the planets from the Sun is expressed in centimeters., which enables us to compute the Gravitational Potential "Phi" expressed in ergs. .

Planet:	Rad(cm)	Phi(erg)
Mercury	5.7909E+12	-2.291938E+13
Venus	1.0820E+13	-1.226613E+13
Earth	1.4961E+13	-8.872095E+12
Mars	2.2479E+13	-5.822731E+12
Jupiter	7.7833E+13	-1.052539E+12
Saturn	1.4270E+14	-9.301062E+11
Uranus	2.8696E+14	-4.625263E+11
Neptune	4.4966E+14	-2.951658E+11
Pluto	5.9001E+14	-2.249517E+11

This enables us to compute the gravitational potential at each of the planetary radii with the formula Phi= -G*Ms/Rad. Phi being the work required to displace unit mass out of the gravitational field at that radius expressed in ergs. Our main problem is then to determine the various velocities upon which the kinetic energy of a ring in a gravitational field is to be based. Fortunately we have already determined these velocities in our program 'Fringes_2' involving the zero fringe shift of a Michelson interferometer. The velocities involved and their magnitudes are as

follows.

==========

VELOCITY OF LIGHT GOING TO THE SUN = Cosmic Velocity Cc

Cc = 2.99792459689 E+10 cm/sec

==========

EINSTEIN'S 1911 TWO-WAY TRANSVERSE SLOWING OF THE VELOCITY OF LIGHT IN A GRAVITATIONAL FIELD (C_trans)

C_trans = Cc*(1+(Phi_s_e/Cc^2))

C_trans = 2.99792456731E+10

==========

VELOCITY OF THE LIGHT COMING FROM THE SUN

In determining the magnitude of the slowing of the velocity of light coming from the Sun, we have found that we must base our reasoning on the known zero fringe shift of the Michelson interferometer. This means that the slowing of the velocity of light coming from the Sun must be just twice Einstein's transverse slowing. Under these conditions we have found that
the velocity of light radiating from the Sun at the radius Rad is:

C_rad = Cc*(1+(2*Phi / Cc^2))

where: Phi = -G * M_sun / Rad

On the Pound-Rebca-Snider Experiment

The most successful experiment for the determination of the magnitude of Einstein's gravitational red shift was the Pound-Rebca-Snider experiment conducted in 1965. This experiment obtained red shift

values that were in accord with Einstein's prediction within one percent. However, when we consider this experiment in terms of our ring model of matter, taking into consideration the fact that velocity effects are being neglected, it appears to us to be more of a demonstration of the law of the conservation of energy for a freely falling body in the very low velocity range. So at this point we feel that we can close the subject of gravitational red shift, as we have found no effects that cannot rightfully be a part of our neoclassical physics.

On the Anomalous Advance of Perihelia of the Inner Planets

There is then a third classical test that relates to the anomalous advance of the perihelia of the inner planets. To our understanding, the General Theory of Relativity obtains accord with the known values of advance by the use of the three following effects.

1. Curvature of space-time.
2. Increase of mass with velocity.
3. Reduction of the gravitational potential by a small term proportional to the square of the potential.

It is here that we use it in our attempt to solve the problem of the advance of planetary perihelia.

Our problem was then to develop, on the basis of a neoclassical physics, a mechanism to explain the cause of the anomalous advance of the perihelia of the inner planets. Our target values were those obtained by the General Theory of Relativity, as we were attempting to show that practically the same values could be obtained without the use of a relativistic space-time curvature.

Our initial computer runs, made without perturbational effects, showed very near zero advance of perihelia for all bodies, which indicated that the subprogram that we developed to detect the perihelion point was working properly. We then had the problem of how to introduce an effect

to get an advance of perihelia. We already knew that a decrease in the gravitational potential would cause an advance, but our problem was that in our Rkf orbital program we worked in terms of the radial distance of the body from the sun, whereas in our ring programs we worked in terms of gravitational potential. However, we soon found that this problem could be solved by working in terms of a *gravitational potential displacement distance*, which we termed Gpdd. It was then apparent that the Gpdd was always negative, making the gravitational potential more negative.

But the problem then was, how to determine the magnitude of the Gpdd value for each of the inner planets. As we had been unable to find a means of computing these values, we had to resort to the method of trial-and-error to determine the values of Gpdd that would give the best accord with the relativistic findings for the advance of perihelia. Starting with Mercury, the value of the Gpdd arrived at was -4.39 E+5 centimeters, which is a little under three miles. When we then repeated the procedure for Venus, Earth, Mars and the asteroid Icarus, we were surprised to find that they all had the same value of Gpdd.

To determine the effect of such a modification, we then changed our Rkf computer line for gravitational potential from

G_pot = -Kg*Ms/Rp

where Kg is the gravitational constant, Ms is the mass of the sun and Rp is the orbital radius of the planet, to read

G_pot = -Kg*Ms/(Rp + Gpdd).

The following table shows the values of the advance of perihelia that we then obtained with this modification, compared to the values obtained by the General Theory of Relativity.

Advance of Planetary Perihelia

	Relativistic	Calculated
Mercury	42.984	42.558
Venus	8.6247	8.609.
Earth	3.8386	3.806
Mars	1.3509	1.339
Icarus	10.04	9.946

Now this was a very strange situation. With our relatively simple Rkf subprogram, we were getting a close accord with the complex calculations of the General Theory of Relativity. But up to this point all that we had to offer was a Gpdd device that gave the correct advance of planetary perihelia. Nothing had been said in regard to the mechanism causing this change in gravitational potential.

In our analysis of this problem, the model that we had to consider was a ring model of the electron with ether flux interlock. We then accepted Einstein's 1911 hypothesis of the slowing of the transverse velocity of light in a gravitational field as a reality. As far as the mechanism for the slowing of the velocity of light in a gravitational field is concerned, it relates to the kinetic energy of the rings of matter, based on the assumption that the rings maintain a constant diameter. In a gravity-free rest state the ring has a kinetic energy of .5MCc^2. If the ring is lowered in a gravitational field, energy is withdrawn. This energy must then come from the rate of spin of the ring. With this reduction in rate of spin, the velocity of the interlocking light-bearing ether flux particles must also slow, causing a reduction in the velocity of light. This we believe to be a simple mechanistic explanation of Einstein's 1911 concept of the slowing of the transverse velocity of light in a gravitational field. It is then this reduction of kinetic energy of the ring particles of matter that cause the reduction in the gravitational potential associated with our value of Gpdd.

Comparison of Gravitational Potentials

Gravitational potentials obtained when the radial distance is adjusted by the Gpdd distance, compared with the gravitational potential, based on Einstein's slowing of the transverse velocity of light in a gravitational field.

Mercury	-2.288601E+13 ergs	Based on the Gpdd effect.
	-2.245449E+13 ergs	Based on Einstein's 1911 slowing of the velocity of light.
Venus	-1.224775E+13 ergs	
	-1.226375E+13 ergs	
Earth	-8.859151E+12 ergs	
	-8.870727E+12 ergs	
Mars	-5.814376E+12 ergs	
	-5.821974E+12 ergs	

So here we find that Einstein's 1911 concept of the transverse slowing of the velocity of light in a gravitational field provides us with an explanation of the cause of our gravitational potential displacement distance.

Subterranean Gravitational Forces

So far we have been concerned mainly with orbital problems. Let us now outline our current thinking in regard to a possible subterranean gravitational mechanism. The basic problem here is to devise a mechanism that will generate a central gravitational force on each particle of matter.

As to the mechanism of the central gravitational force on all particles of matter toward the center of a body, we must assume that the transpiercing ether flux particles are slowed as they approach the center of a body and accelerated as they recede from the center. Thus the mechanism of gravitation is that the subparticles of the rings of matter decelerate the incoming ether flux particles and accelerate the outgoing ether flux particles, which enables the ring to maintain its rate of spin. The rings of matter are thus given a central gravitational impulse at both of these interactions, which generates the requisite gravitational force for masses within the body. There is then a slight slowing of the ether flux particles as they pass through the body, giving the body its gravitational attraction.

THE SHAPIRO TIME DELAY OF LIGHT

We now come to the problem that is known as the *Shapiro Time Delay of Light.* This problem did not arise until 1965 when Irwin Shapiro and his coworkers were bouncing radar signals from the inner planets and measuring the time required for the two-way propagation of the signal. With both the distances involved and the velocity of the signal known to a high degree of accuracy, the theoretical time for a two-way transit was already known. Their initial findings were in full accord with the theoretical values, but it was then found that when the signal passed close to the sun, there was no longer an accord. It is there that they found that the signal was being delayed in some unknown manner by about 250 microseconds.

As the present solution to this problem is based on the assumption of a four-dimensional curved space-time, we must now attempt to develop an alternate mechanistic solution that is based on the principles of our neoclassical physics. In first contemplating this problem in terms of our neoclassical physics, a possible solution immediately came to mind, and that was that we have Einstein's slowing of the velocity of light in a gravitational field that should produce a time delay. But when we

calculated the magnitude of such a delay, we found that it was too small to be of concern in regard to this problem. So we then had to search elsewhere for the cause of the time delay.

Our search led us to consider the conditions within the solar corona. Apparently Nicholas Fatio was at one time interested in the solar corona in regard to his theory of an ether flux, for a historian of science tells us that the first known written mention of the solar corona is to be found in a letter to a well-know astronomer that was written by Fatio.

The corona can be observed at the time of a solar eclipse as a spectacular glowing region surrounding the eclipsed Sun. From the photos of the corona that we have seen, it can extend to almost twice the diameter of the Sun. From the spectrographic data of the light coming from the corona, it is known that its energy is immense. Now the question is, where is this energy coming from? We are of the opinion that it is coming from the coronal ether flux particles due to a reduction in their velocity. As the ether flux particles are the carriers of light energy, we would then have a relatively simple physical mechanism that could be the cause of the Shapiro time delay of light without the use of a four-dimensional curved space-time.

ON THE MISSING SOLAR NEUTRINOS

With the above model that we have developed, there appears to be some very interesting aspects in regard to the source of the immense heat that has been generated by the sun for nearly twenty billion years. This was a very difficult problem of the past that was finally "solved" by assuming that it was the consequence of radioactive processes within the sun that generated the heat. However, the assumed processes were known to be generators of a vast number of neutrinos, and all the attempts to detect these neutrinos have failed.

This opens the way for an alternate explanation. This we can supply

by our assertion that the velocity of an ether flux particle decreases in passing through a massive body, thus generating heat. Such a slowing is essential as it is this that gives a body its gravitational "attraction". The degree of slowing would naturally be dependent on the size and the nature of the body. According to our calculations, for the sun the loss factor would be about 0.000049. For a Black Hole it would apparently be 1. This same explanation would apply to the heat generated within the earth. If our reasoning is correct, this would not only eliminate an erroneous concept, but it could also open the way to the finding of means to tap into the infinite energy of the ether flux.

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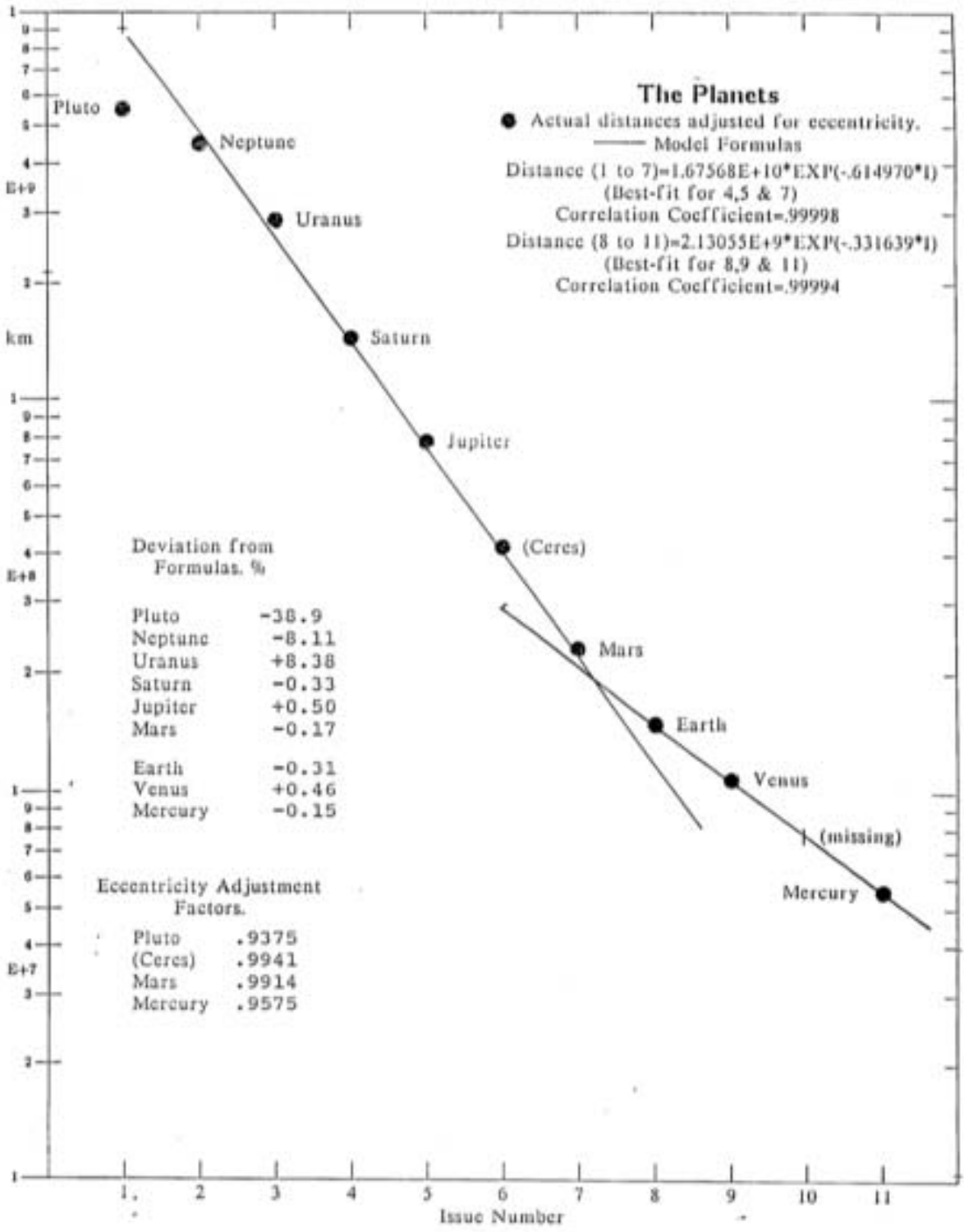
On the Origin of the Solar System

INTRODUCTION

In the title for this chapter the initial word ON was selected to indicate that our considerations would be of a limited nature, as our main concern is in regard to mechanisms. What we are attempting to do is to develop a mechanism that could possibly be a rough approximation of one of the hidden mechanisms active in the formation of the solar system. We start after protostellar clouds have been generated and proceed with the generation of embryo masses for both the planets and the satellites, and end before the process of accretion of matter onto these bodies is complete. Our task is thereby limited to the description of the mechanism of the generation of both the embryo planets and their embryo satellites at their proper distances from their primaries. The remaining problems in the overall process are of a highly technical nature, demanding the efforts of top scientists from many disciplines.

We will start this study by displaying several graphs that we have developed, showing the relative positions of the various planets and their satellites of our solar system. The graph of the positions of the planets follows below, while the graphs of the satellites of the planets are presented at the end of the following essay.


The Planets
Actual distances adjusted for eccentricity.
Model Formulas
Distance (1 to 7)=1.67568E+10*EXP(-.614970*I)
(Best-fit for 4,5 & 7)
Correlation Coefficient=.99998
Distance (8 to 11)=2.13055E+9*EXP(-.331639*I)
(Best-fit for 8,9 & 11)
Correlation Coefficient=.99994
Pluto
Neptune
Uranus
Saturn
Jupiter
(Ceres)
Mars
Earth
Venus
(missing)
Mercury
km
E+9
E+8
E+7
Deviation from Formulas. %
Pluto -38.9
Neptune -8.11
Uranus +8.38
Saturn -0.33
Jupiter +0.50
Mars -0.17
Earth -0.31
Venus +0.46
Mercury -0.15
Eccentricity Adjustment Factors.
Pluto .9375
(Ceres) .9941
Mars .9914
Mercury .9575
1 2 3 4 5 6 7 8 9 10 11
Issue Number

THE TITIUS-BODE LAW OF PLANETARY DISTANCES

One of the most puzzling features of the solar system is the strange regularity of not only the distances of the planetary bodies from the Sun, but also the same pattern of regularity in the distances of the lunar bodies from their planets. So far, no one has been able to provide a satisfactory explanation as to how these regularities came about. It is with this problem that we are mainly concerned.

The regularity of the distances of the six inner planets from the Sun became most apparent when the Sun was placed in the center of the system by Copernicus in his work "On the Revolutions of the Heavenly Spheres", published in 1543. Kepler's first astronomical publication, "Mysterium Cosmographicum", which he published 1596 at the age of 25, was an attempt to give a rational basis for this order. We learn from Arthur Koestler's [1960] biography of Kepler, that in the preface of this work Kepler states that getting nowhere in his early attempts, he tried "a startlingly bold solution": he inserted an additional planet between Jupiter and Mars and another between Mercury and Venus, hoping to get some sequence of ratios. But this did not work out either. From this we can conclude that Kepler recognized two areas where this regularity is broken, the one between Mars and Jupiter and the other between Mercury and Venus where a planet appears to be missing.

Kepler's final "solution" was that of a geometrical model composed of a concentric arrangement of the five regular solids separated by spherical shells. The ratios that he was looking for were then found in the dimensional relationships of the model. According to Koestler, in this arrangement, Kepler had to cheat a little in the placement of Mercury's sphere. We point this out merely to indicate that even in his model, Kepler was having difficulty with the second irregularity in the planetary distances mentioned above.

Although the model was a failure, the publication was a great

success. It established Kepler as an outstanding original thinker in the minds of such men as Galileo and Tycho Brahe and launched him on his remarkable path of discovery relating to planetary motion.

By 1766, only the same six inner planets were known to exist. Uranus, Neptune and Pluto were yet to be discovered. At about this time Johann Titius, a German mathematician, hit upon a particularly interesting means of representing the then known planetary distances. It was effectively this. Construct a table of values by adding .4 to each member of the progression 0, .3, .6, 1.2, 2.4, 4.8, 9.6. The tabular values thereby become .4, .7, 1.0, 1.6, 2.8, 5.2 10.0. If it is then assumed that there is a missing planet between Mars and Jupiter, these values represent the planetary distances from Mercury to Saturn, expressed in astronomical units. The accord of these values with the then known planetary distances was remarkable. The greatest deviation being that of Mars, which was less than five percent. It should be noted that this law had the attractive feature that the distances were expressed in astronomical units, giving the distance for the Earth the distinguishing value of one.

Now, we can see how Titius eliminated the first of the planetary distance irregularities, that is by the insertion of a missing planet between Mars and Jupiter, but how did he eliminate the second irregularity between Mercury and Venus? The answer to this question is well known. Although the progression 0, .3, .6, 1.2, 2.4 - - , has the appearance of a mathematical series, it is not. The zero should be .15 . It is for this reason that Titius had to resort to the odd rule of computation, rather than expressing the relationship in terms of a mathematical formula. Here we see that Titius too, had to cheat a little to get Mercury into accord.

The numerical sequence given by the rule of computation has been given the appellation of "law", apparently to imply a concise order rather than chance. However in the strict sense of the word it is not a

law. But as it has become an established term for this usage, we will continue to use it. Furthermore, today it is generally being referred to as Bode's Law, even though the article by Jaki (1972) demonstrates clearly that Titius was the originator of the law. Actually, Titius supplied the law, and Bode, with his exceptional journalistic abilities and his recognition of the importance of such a law, publicized it. Both of them have credit due.

So far we have considered this law up to the orbit of Saturn and have seen the remarkable accord. As this law is open-ended for the greater distances, it also indicates planetary orbits at 19.6, 35.2, and 77.2 astronomical units. The question now is, how well does it accord since the discovery of Uranus, Neptune and Pluto.

The planet Uranus was discovered by William Herschel in 1781. This planet had been previously observed many times by others, but always catalogued as a star. But, when viewed by Herschel with an improved telescope, the planet no longer appeared as a point of light, which is characteristic of a star, but as a disk, which is characteristic of a planet. A quick recheck of its prior positions showed it to have motion, proving it to be a new planet. When its distance was then determined, it was found to be within approximately two percent of that predicted by the Titius-Bode law.

A second brilliant confirmation of the Titius-Bode law then occurred in 1801, when the Italian astronomer Giuseppe Piazzi discovered the minor planet Ceres, the largest body of the asteroid belt. He was in the process of preparing an extensive star catalogue, when he observed an object that had not been recorded before. Observing it again two nights later, he found that it had moved. To rule out the possibility that it was a comet, he continued to follow it until it appeared to reverse its direction of motion. When this happened, Piazzi recognized that he had discovered a new planet. When the distance of Ceres was determined, it was found to be within approximately one percent of that

indicated by the Titius-Bode law.

Some confusion then arose in 1802, when Olbers discovered Pallas, another of the minor planets, with a distance very near that of Ceres. The addition of a second planet to one of the assigned distances appeared to upset the assumed regularity. Olbers then suggested that Ceres and Pallas were actually fragments of a large planet that had violently disintegrated at some time in the past, such a disintegration being caused by either a collision with a comet or by powerful internal forces. He further suggested that if this were the case, there should be many other remaining fragments yet to be discovered. His prediction proved to be correct with the discovery of two more minor planets and thousands of smaller fragments, forming what is now referred to as the asteroid belt. With these discoveries, it was generally recognized that the gap in the Titius-Bode law had been successfully filled.

For the two remaining planets, however, the law appears to break down. Neptune was "discovered" about the same time by the Englishman John Adams and the Frenchman Urbain Leverrier. Here, the instrument of discovery was not the telescope, but pen and paper. The observations of the lately discovered Uranus indicated that its motion was being perturbed by some unknown body. Both Adams and Leverrier, working independently, computed the orbit of the unknown body from the known perturbations. Working from the orbital data supplied by Leverrier, the German astronomer Galle first observed the planet in 1846. When the distance of Neptune was finally determined, it was found to differ from the Titius-Bode law by over twenty-two percent.

The discovery of Pluto has an analogous history to that of the discovery of Neptune, with the discoverers being Percival Lowell and William Pickering. However, Pluto being both the smallest and the most distant of the planets, its actual observation presented a difficult problem. This problem was solved by means of a "blink microscope",

which alternately displays two superimposed photographs of the same area of the sky that have been taken about two or three days apart. To the observer, the stars appear as fixed points, however, a body with motion, such as a comet or a planet, will appear to jump back and forth. At the Lowell Observatory in 1930, a young assistant, Clyde Tombaugh, assigned to view the films, first observed the zig-zag signaling of Pluto. When its distance was determined it was found to differ from the Titius-Bode law by nearly forty-nine percent.

Although today, with our detailed knowledge of the dimensions of the solar system, we may be able to develop a more precise mathematical expression for planetary distances and at the same time point out the defects of the Titius-Bode law, we must not forget that the Titius-Bode law was there when it was needed, and it played a very important part in the development of our knowledge of the solar system.

But here it becomes apparent that the Titus-Bode law has a limited range of validity, as only the planetary bodies are taken into consideration, the lunar systems are not involved. Therefore, for the generation of the lunar systems, we must devise a totally new lunar generating mechanism.

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A Mechanism for the Generation of the Solar System

WHAT WERE THE MECHANISMS BY WHICH THE PLANETS AND THEIR SATELLITES WERE PLACED IN THEIR RESPECTIVE POSITIONS?

In our attempt to devise a mechanism for the generation of the solar system, we found that the system generated is totally dependent on the initial conditions. For instance, if the system was generated by a single proto stellar cloud, the orbit would be circular and there would be no planets, only the sun. We have therefore made the basic assumption that the solar system was generated by two proto stellar clouds in a state of off-center collision. As they collide, the interpenetrating portions will meet with high resistance and be decelerated to form a central nucleus with a low angular momentum, whereas the outer portion of the larger cloud is free to go into a highly elliptical orbit about the center of mass of the system.

OUR MECHANISM FOR THE GENERATION OF THE PLANETS

It is then assumed that with the passage of time, the central portion of the disk that is to form the sun has contracted to about three-quarters of the diameter of the orbit of Mercury and has about it a thin disk of matter that extends beyond the limits of our present solar system. Now here the question arises as to why two protostellar clouds were needed, rather than one. Could it not be assumed that protostellar clouds collapse in this manner? Our answer to this question is three-fold. First, there is the problem of the very high angular momentum of the generated disk. With a single cloud, this would have to come from the cloud itself, however with two clouds there is the very high input of angular

momentum produced by the off-center collision. The second reason is that it has long been a puzzle as to why the sun's rotational axis is not perpendicular to the orbital plane, but inclined at about 6 degrees. With the collapse of a single protostellar cloud, the source of angular momentum is within the cloud itself, and one would expect that this would have a common axis of rotation, whereas in the case of the collision of two such clouds, there are three sources of angular momentum, one from each of the clouds and one from the off-center collision. The resultant angular momentum, and its direction, for both sun and disk would then be dependent on the ratios of the two original masses contained within them. The displacement of the sun's rotational axis of only six degrees should therefore present no problem. The third reason is that the mechanism we are to consider demands that the disk generated must have initially a moderate degree of eccentricity, a condition that would be difficult to explain for the collapse of a single cloud.

EVOLUTIONARY SEQUENCE REQUIRED FOR BOTH THE PLANETS AND THE SATELLITES

Here we are starting with a new protosolar disk that must in some way generate the sun with the planets in orbit about it. Obviously, this task cannot be a simple one. For our mechanism we find that it requires a sequence of specific evolutionary events in order for it to do so. However, when we then come to the task of developing a mechanism by which the protoplanetary disks generate the satellites, we find that the very same mechanism applies.

DISK CONTRACTION AND THE DISPOSAL OF EXCESS ANGULAR MOMENTUM

With our model of the protosolar disk, the first of the evolutionary problems to be faced is the mechanism of the contraction of the disk and the disposal of its excess angular momentum. Here the action takes place at the disk's edge. If we assume a very thin disk of uniform surface

density, we can derive formulas that give an approximate value of the gravitational force on a test particle, either within the disk or external to the disk edge. As we expected, these formulas show that there is a very rapid rise in the force as the particle approaches the disk edge. What was not expected was that in a computer run with the disk contracting and a particle in orbit at the disk edge, the particle suddenly broke away from the disk edge and went into an escape orbit. (We later found that A. G. W. Cameron had already suggested such a mechanism for the disposal of the excess angular momentum, several years earlier.)

Formation of an annular disk at protosolar disk edge

As we probed deeper into the behavior of matter at a disk edge, by means of numerous computer runs we finally arrived at a disk model on which to base a mechanism for the generation of both the planets and the satellites. We will start with a description of this model at the time that the protosolar disk has formed and has begun to contract. Its radius extends well beyond the limits of the solar system and its shape has a moderate degree of eccentricity. We conceive that all along the inner side of the disk edge there is a light-build-up of matter, whereas exterior to the disk edge the area is free of matter. This would be due to what we will call disk-edge trapping. That is, as the disk contracts the matter within the disk is trapped, for the only way that it can pass beyond the disk edge is to wait until it reaches the local velocity of escape. But here, the local velocity of escape is a super escape velocity that not only disposes of its own angular momentum, but an additional amount to allow for the central bodies to form. This means that matter trapped would continue to build up, forming an annular disk at the protosolar disk edge.

We then have three mechanisms of disk contraction. With the velocity of the particles at the disk edge at or near the local velocity of escape and the newly acquired low-velocity particles at the inner portion of the annular disk, it is apparent that there will be a high velocity

gradient across the annular disk. This model then provides us with three basic causes of disk contraction. The first is due to the escape of matter from the annular disk edge, as we have described above. With the loss of the attractive force of this matter, the central force on the inner particles increases, causing them to decrease their radius to gain velocity to reestablish a force balance. The second is due to the flow of the low-velocity matter into the inner edge of the annular disk. With the slowing effect of this matter, there will again be a reduction in radius to regain a balance of forces. There is then a third cause of disk contraction that is not so apparent, and that is due to the in-fall of matter from the parent protostellar cloud. On the average, this matter should have zero angular momentum, which would then require further disk contraction to bring it up to speed.

Hoop tension in annular disk

With the generation of an annular disk of matter a new gravitational force has been added, and that is the force of hoop-tension in the annular disk itself. At any section of the disk there are equal and opposite gravitational forces that are self compensating. As long as the annular disk remains intact the forces of hoop tension can be neglected.

Rupture of annular disk, forming a train

At this point in our narration, we must prepare the reader for strange happenings. We are to assume that the buildup of hoop-tension in a contracting annular disk is an unstable condition, and that a threshold is always reached where a parting or rupture of the annular disk occurs. The consequence of such a rupture is quite evident. In the zone of the rupture the hoop-tension forces are no longer balanced, causing the annular disk to part and contract into an annular disk segment. We will refer to such an annular disk segment as a *train.*

We now come to the critical problem for our mechanism, and that

is as to what happens to the train after the annular disk rupture occurs. As to the tail end of the train, one would think that it should simply trail along as a caboose. Yet, for certain of the minor satellites, it looks like the tail of the train could have broken loose and then separated into individual bodies to give multiple bodies with a near common orbit. However, the head of the train presents a major problem. It starts as a very wide thin sheet of matter, that has a velocity gradient across it, with the matter at the outer edge at the velocity of escape. But what then?

A protoplanetary disk is generated at the head of the train. Although we are not in a position to say what such a configuration *will* do upon disk rupture, we are in a position to say what it *might* do in order to generate a solar system such as ours. Here we have shown what we believe to be the requisite configuration for planetary and satellite generation. The concept is that with the force of hoop tension lost, the matter of the train turns inward to build up, what we will refer to as, a *new* protoplanetary disk.

A protoplanetary disk is generated at each perihelion

Our next problem is that of the issuance of each of the new protoplanetary disks, where it breaks from the train and goes into an independent orbit. It is here where the requisite orbital eccentricity of the system enters in, for there is need for a precisely periodic effect to generate the orbital distance regularities. As we have already indicated in our model regarding the planetary distance regularities, we have chosen the orbital perihelion to be the high stress point where the disk separates from the train.

Generation of the planets

Then there is the matter of the central portion of this new protoplanetary disk that forms the planet and the outer portion that forms the satellites. After each planetary issue, the train starts building up a new

planetary disk for issue at the next perihelion. This cycle is then repeated, once for each issue, until the issues are terminated for one reason or other. Thus, for the generation of the planets, there is but one train that takes a contracting spiral path, generating a new protoplanetary disk at each perihelion.

Satellite Generation

With the generation of each of the new protoplanetary disks complete, the matter in the central portion of each of these disks forms a planet, leaving us with the problem of the generation of the satellites. But at the time that each of the planetary trains generates a planet, a satellite train is generated in a contracting orbit about the planet, generating a satellite at near each pericentron. It is simply a scaled down version of the same mechanism that developed the planets. Thus for the generation of the satellites, each planet has its own satellite train with a contracting spiral path, generating a satellite at near each pericentron.

PLANETARY AND SATELLITE GENERATION IN BRIEF

Protosolar disks generate planets

We start with an extensive new protosolar disk. The sun is generated from the matter near the center of the disk, while the planets are generated from the matter further out. The new protosolar disk must first go through an evolutionary sequence in which a single orbital train is generated. This train starts at the edge of the protosolar disk and follows a contracting spiral orbit, issuing a new protoplanetary disk at each perihelion. With the new protoplanetary disks in place, the protosolar disk is depleted. There is only one protosolar disk.

Protoplanetary disks generate satellites

We then have a new protoplanetary disk for each planet. As the

mechanism that follows is the same for each planet, we will describe only one. The planet is generated from the matter near the center of the disk, while the satellites are generated from the matter further out. Here again, the new protoplanetary disk must go through an evolutionary sequence in which a single orbital train is generated. This train starts at the edge of the protoplanetary disk and follows a contracting spiral orbit, issuing one or
more satellites at each pericentron. There is a protoplanetary disk for each planet.

WHY DOES PLUTO FAIL TO SHOW A DISTANCE ACCORD?

Let us now take a look at Pluto to see if we can determine the reason why it fails to show a distance accord. Its mass is only about 0.000146 percent that of its nearest neighbor Neptune and its orbit is both highly elliptical and highly inclined. It has a single satellite, Charon, with a mass that is 0.0125 times its own mass, by far the highest ratio in the solar system. Furthermore, the orbit of Charon is inclined over ninety-four degrees. The conclusion that we have arrived at is that Pluto and Charon were not generated in the normal generating process, but were generated at the time of the rupture of the disk. That they were two small bodies in orbit about each other that were located about mid-way between the parting disk edges. This possibility is supported by the fact that Charon is the largest satellite relative to its primary in the solar system. Furthermore, with the exception of the Earth, it is the only planet with a single satellite.

We have therefore neglected Pluto in computing the planetary distance plot. The outer six planets then show good distance uniformity, but the remaining inner three planets require the addition of a missing planet to show distance uniformity. As can be see in the graph, the slope of the two curves differs for some unknown reason.

Satellites of Neptune

In our prior considerations, we have omitted the satellites of Neptune as it has only two major satellites, Nereid and Triton. With the additional six minor satellites discovered during the Voyager 2 flyby, we obtain the graph of the satellites of Neptune shown at the end of this essay. The horizontal lines indicate the distances of the rings about the planet. From this plot it is quite apparent that breaks in the distance curve are not unique, as this curve has three. It is only between the issues 4 to 6 and 6 to 8 that a linear plot is shown.of retrograde orbits.

Satellites of Uranus

Our graph of the major satellites of Uranus had the five more distant satellites. To this we now add the ten more recently discovered minor satellites, as shown in the figure of the Satellites of Uranus at the end of this essay. Here we find a break in the curve that is very similar to the break occurring in the planetary curve. So this lessens the possibility of the break being caused by the abortive sixth issue. Another interesting feature of this plot is that the final break is in the downward direction. Perhaps this has some hidden significance. And note that the train is generating regular issues in the zone now occupied by the rings, as the last two issues are the guardian satellites for Uranus's epsilon ring.

Satellites of Saturn

In our graph of the major satellites of Saturn, we plotted the distances of the eight satellites from Iapetus to Mimus. In the new graph of the Satellites of Saturn at the end of this essay, we first add the names of three Lagrangian satellites that share orbits already given and then add the five recently discovered minor satellites to the lower end of the plot. In this graph, issue 15 is for the two satellites Janus and Epimetheus, the remarkable pair that periodically exchange orbits.

Let us first consider just how the occurrence of Lagrangian orbits relates to the mechanism of satellite generation that we propose. As is well known, there are two positions in the orbital path of a body that are effectively islands of security for relatively small bodies. They lie 60 degrees ahead and 60 degrees behind the orbiting body. As we know of no mechanism by which such orbits can be generated in a positive manner, we must then assume that they are generated by chance. The question then arises as to why Saturn should have the only three Lagrangian orbits in the solar system.

To answer this question we must first backtrack and add the assumption that Saturn's satellite generating train was such that it issued numerous very small bodies at the time of each issue. We can then respond that for Saturn there was a greater probability of generating Lagrangian orbits due to the large number of very small bodies present.

There then remains the problem of just how Saturn's co-orbital satellites, Janus and Epimetheus were places in adjacent orbits, precisely spaced so as to allow them to exchange orbits periodically. This situation suggests that the two bodies were issued as one with a subsequent parting of the two. The particular alignment necessary to get the orbit exchange would then be a matter of chance.

We then return to the problem of explaining why Saturn should have so many missing satellites. We have already rejected the possibility that they were ejected from the system by near encounters with other bodies, as such a condition would certainly have perturbed the remaining bodies. It then appears that the missing satellites were simply due to the failure of the proto planetary disks to make the issues. Possibly, the mass build up was insufficient to cause the requisite instability at pericentron for issue.

Satellites of Jupiter

In our graph of the major satellites of Jupiter we plotted the distances of the six satellites from Callowest to Am althea. In the new graph at the end of this essay we add eight minor satellites at the high end and two at the low end. In regard to the eight minor satellites at the high end, there is an outer group of four that have a near common orbit that is retrograde and an inner group of four that have a near common orbit that is programed. Their total mass is less than one-thousandth the mass of the adjacent planet, Callisto. It then appears that for both of these groups, the matter issued was in the form of a column that subsequently broke up to give the individual bodies. The two new satellites at the low end that have been added are obviously very small terminating issues.

Before closing on the satellite systems of the outer planets, we would like to make a final observation that relates to a possible origin of certain of the planetary rings. It has often been suggested that a large body wandered too close to the planet and was broken apart by tidal forces, thus supplying the matter for the formation of the rings. The weakness of this hypothesis is that it fails to explain why the rings invariably lie in the orbital plane of the satellites. However, for the four satellite plots shown, each terminates with a ring. This suggests the possibility that these rings are actually the ruminates of depleted trains.

(Ceres)
The Asteroids

Although the present estimated total mass of the asteroids is quite low, its total mass at the time of origin must remain unknown, because of its accumulation onto the other planetary bodies. Especially that of its very massive next door neighbor, Jupiter. As to the mechanism of the origin of the asteroids, we have already suggested that it was caused by the plane of the proto planetary disk for this issue being precisely the same as the plane of the train. Under these conditions, the matter of the train would bombard the matter in the disk as it swept from its outer edge to its inner edge, causing a break up and dispersal of the matter issued. It

then appears that for such a mechanism to be effective, both the plane of the disk generated and the plane of the train would have to be quite thin.

Mars

As this process continues for the inner planets, commencing with Mars, issue seven, it is apparent that little remains of the once massive train. Yet, the normal process of satellite generation still appears to be in effect, with the generation of the very small satellites Phobos and Deimos, which both lie very close to Mars' equatorial plane.

Earth

However, when we come to the generation of issue eight, the Earth, we run into problems. The fact that the Earth has only one satellite shows accord, but this satellite, our Moon, has a diameter that is almost three-quarters the diameter of the planet Mercury! As it is apparent that our suggested mechanism for the generation of satellites is no longer in effect for the Earth, we must now look for alternate possibilities. But here we need not look far, for we have already concluded that Pluto and Charon were formed as a binary system and it takes no stretch of the imagination to visualize the formation of the Earth and the Moon as a binary system. The matter issued, instead of forming a forming disk, breaks into two parts that go into orbit about each other.

Venus, Missing Planet and Mercury

The planetary generation process then continues with the ninth issue, Venus, the tenth, the missing planet, and the eleventh, Mercury, none of which have associated satellites. It then appears that the train still had sufficient mass to generate a single body, but not a satellite forming disk.

Train crashes into protosun.

With the planetary generation process complete, we look at the picture and see that the final planet generated, Mercury, is still a considerable distance from the Sun, yet there is no evidence of a further issue of any kind from the train. When we then consider the rapid decrease in mass of the last three planets, we can reasonably conclude that the train simply ran out of mass. However, there is another possibility, and that is that the train crashed into the surface of the Protosun before the next perihelion was reached. For this to occur, the surface of the Protosun would have to be located at about the radius of a hypothetical twelfth issue, which is very near fifty-seven solar radii. As this condition is essential to the solution of a latter problem, we will make it a part of our model.

Fate of the Missing Planet

But what about the missing planet, issue number ten, that was located between Venus and Mercury? Are we to assume that the train, in its exhausted state, simply failed to generate the issue? That is a plausible explanation, but we believe that we are in need of the prior existence of this planet to provide an explanation for one of our more difficult problems. And that problem is: What caused the high eccentricity and high inclination of the orbit of Mercury? To check the possibility of an encounter between Mercury and the missing planet, we now make a quick calculation and find that if both planets had an orbital eccentricity of only 0.17, their orbits would periodically overlap. But, if there was such an encounter, what happened to the missing planet? Apparently, on one of the many possible encounters between the two, the missing planet was given a very high orbital eccentricity, placing a portion of its orbit below the surface of the Protosun. In making a quick calculation we find that if the surface of the Protosun was at the radial distance of a twelfth issue, an orbital eccentricity of 0.5 would be adequate to enable the Protosun to capture the missing planet.

What is the mechanism that caused the inclinations of the planetary

equators?

In the following table we have illustrated the problem with which we are now concerned. The parameter involved is normally referred to as the *Inclination of Equator to Orbit*.

Inclination of Equator to Orbit (Data from K. R. Lang, 1992)

Issue	Planet	Inclination (deg.)	
2	Neptune	28.8	
3	Uranus	97.92	Retrograde
4	Saturn	26.73	
5	Jupiter	3.080	
6	(Ceres)		
7	Mars	23.98	
8	Earth	23.45	

Now this is a very strange irregularity, as one would think that bodies issued from the edge of a thin disk would have equatorial planes that were parallel to the plane of that disk. But here we find that such a case is a rarity, that practically all of the planets show such an irregularity with Uranus having an equatorial inclination of 97.86 degrees.

Our task is to now consider the various possible mechanisms that could be active at the time of issue, to see if we can find one or more that could produce the observed irregularities. Up to now, we have tacitly assumed that at the time of issue, disk and train were in a common plane. We gave no thought to the fact that as the disk broke from the train, the train had to pass from the outer edge of the disk to its inner edge and beyond, producing perturbational effects.

Here it becomes apparent that there is a very critical parameter that we have not yet considered, and that is the angle of inclination of the plane of the train relative to the plane of the issuing planetary disk. We

will call this angle Omega. Now, if Omega was sufficiently high, the issue could take place with little or no shift in the equatorial plane, but if Omega was low, forces would be generated tending to *flip* the equatorial plane of the planet, as we observe for the case of Uranus. But there is more. What happens if the angle Omega is equal to zero? Do we not then have the generation of an asteroid belt?

When we then turn to consider how the satellite systems were generated, our problems multiply, such as how a retrograde satellite with a near circular orbit could be generated. In an attempt to visualize the sequence of the events in the generation of a satellite system, we will start with a protoplanet with an annular disk about it. As this system contracts, the annular disk ruptures, forming a satellite train. At the head of the train matter accumulates to form a protosatellite disk. But when the train breaks from the outer edge of the disk and sweeps across it, there is a period of transition during which many different possible events could occur. Early in the sweep of the train across the disk, bodies in the disk could be accelerated by the high velocity particles at the train edge, causing abnormally high orbital velocities with the possibility of multiple issues. There is then the possibility that at the very end of the sweep of the train, the gravitational force of the disk could cause the issue of one or more retrograde satellites from the train. The multiple satellites would be generated by the issue of a column of matter that subsequently broke up into individual bodies, all having a near common orbit. It is apparent that such a mode of generation would be limited to very small bodies.

WHAT IS THE MECHANISM THAT PRODUCED THE ORBITAL ROUNDING FOR BOTH THE PLANETS AND THE SATELLITES

For the mechanism of orbital rounding, we find that we are most fortunate in that Professor Forest Ray Moulton, in his book "An Introduction to Celestial Mechanics", provides us with the mechanism that we are searching for. This information is contained in section 183,

page 333. Titled "Disturbing Effects of a Resisting Medium". His model is a simple orbital ellipse with a major axis of A-B and minor axis of C-D. There he states:

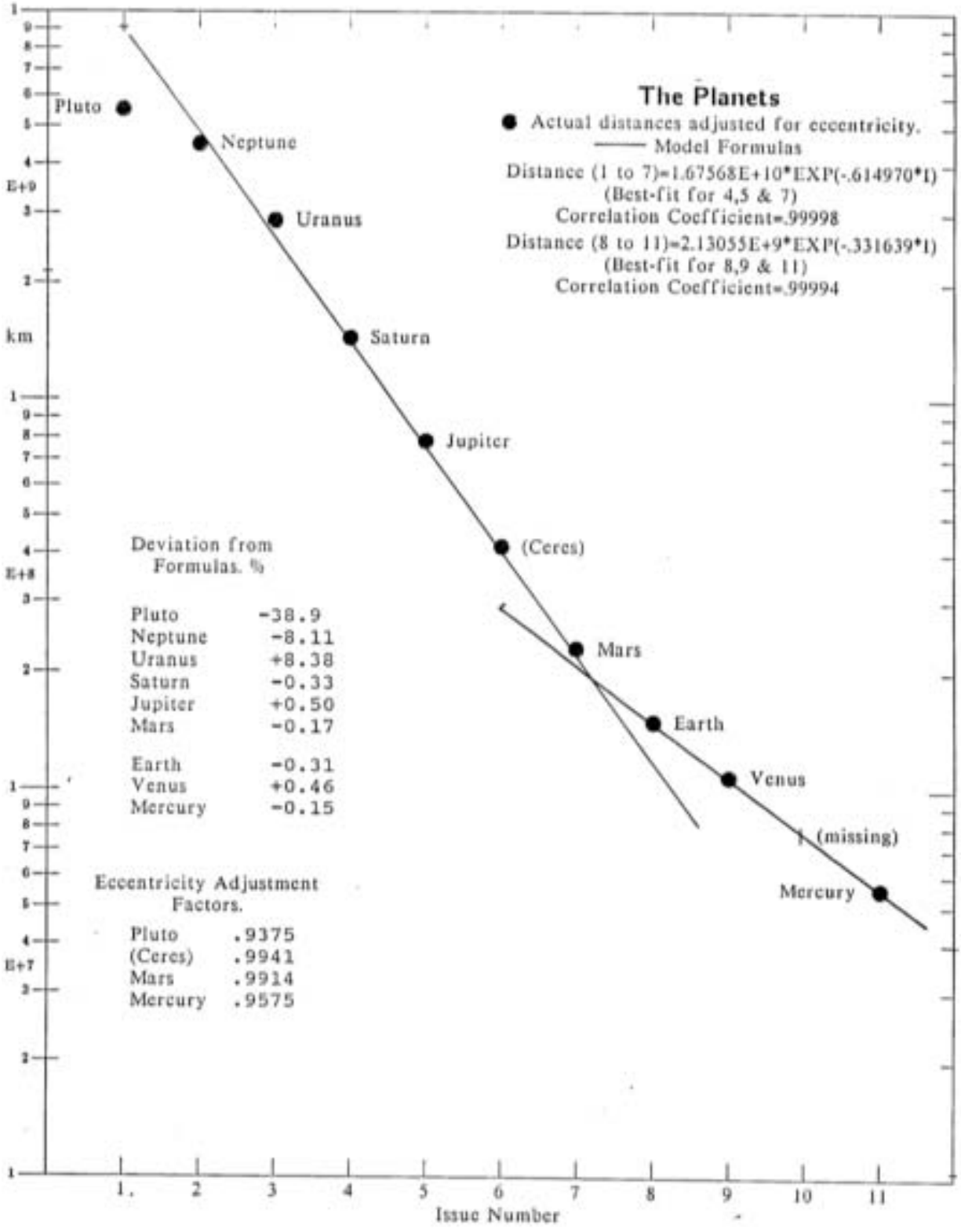
> "The simplest disturbance of ecliptic motion is that arising from a resistive medium. The only disturbing force is a negative tangential component, which has the same magnitude for points symmetrical with respect to the major axis. Therefore it is seen from the table that - - - - - - the eccentricity decreases while the body moves through the interval DAC, and increases during the remainder of the revolution. It takes longer to move through the arc CBD than through DAC; but, on the other hand, if the resistance depends on a high power of the velocity, as experiment shows it does for high velocities, the change is much greater at perigee than at apogee, and the whole effect in a revolution is a decrease in the eccentricity. The application of these results to a comet, planet or satellite resisted by meteoric matter, or possibly the ether, is evident."

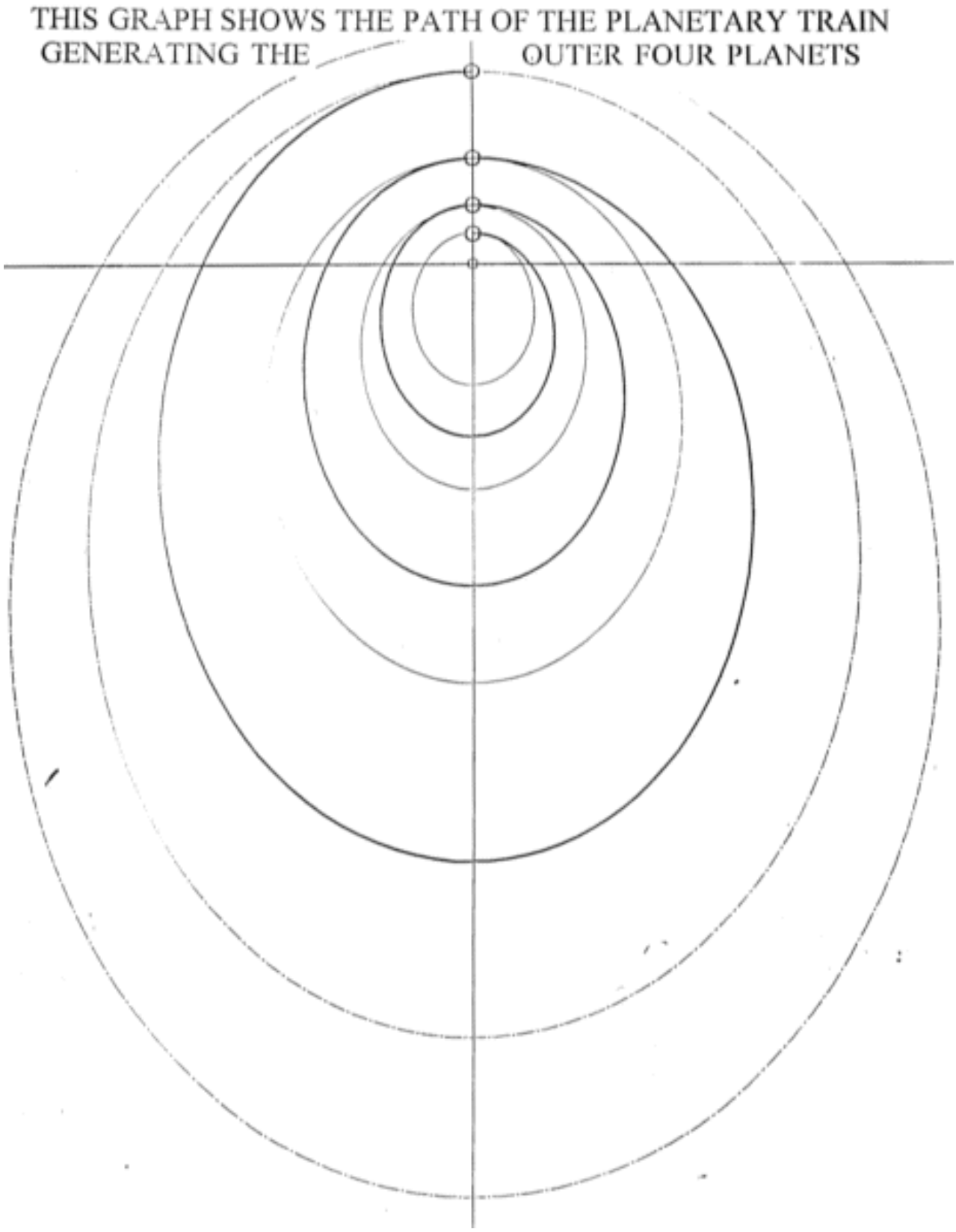
It is here that our parent protostellar cloud enters in. For it is the infall of matter from this cloud that serves as our resistive medium, producing the rounding effect described above.

Closure

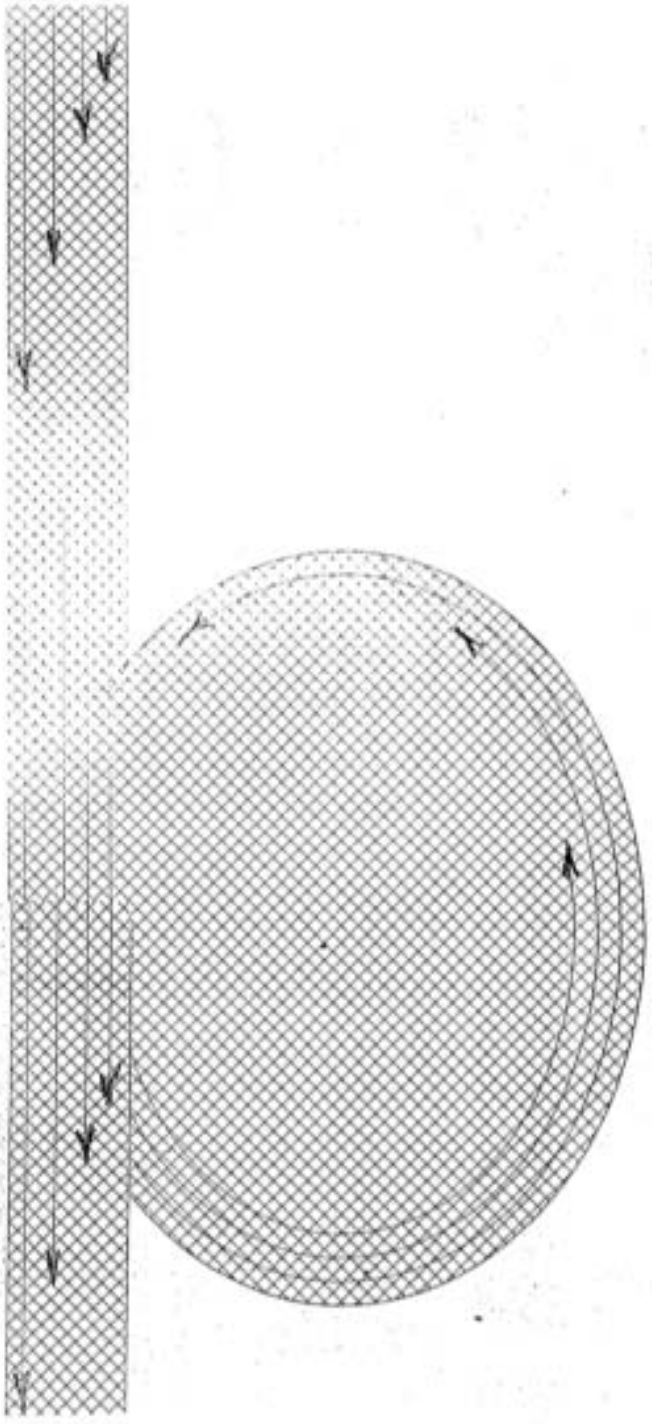
Well, that is finis for our scenario. Its purpose was to present a brief report of the mechanisms that we have arrived at after an endeavor that has lasted many years. We are hopeful that those knowledgeable in this field of research will find it to be of sufficient interest to carry on its investigation.

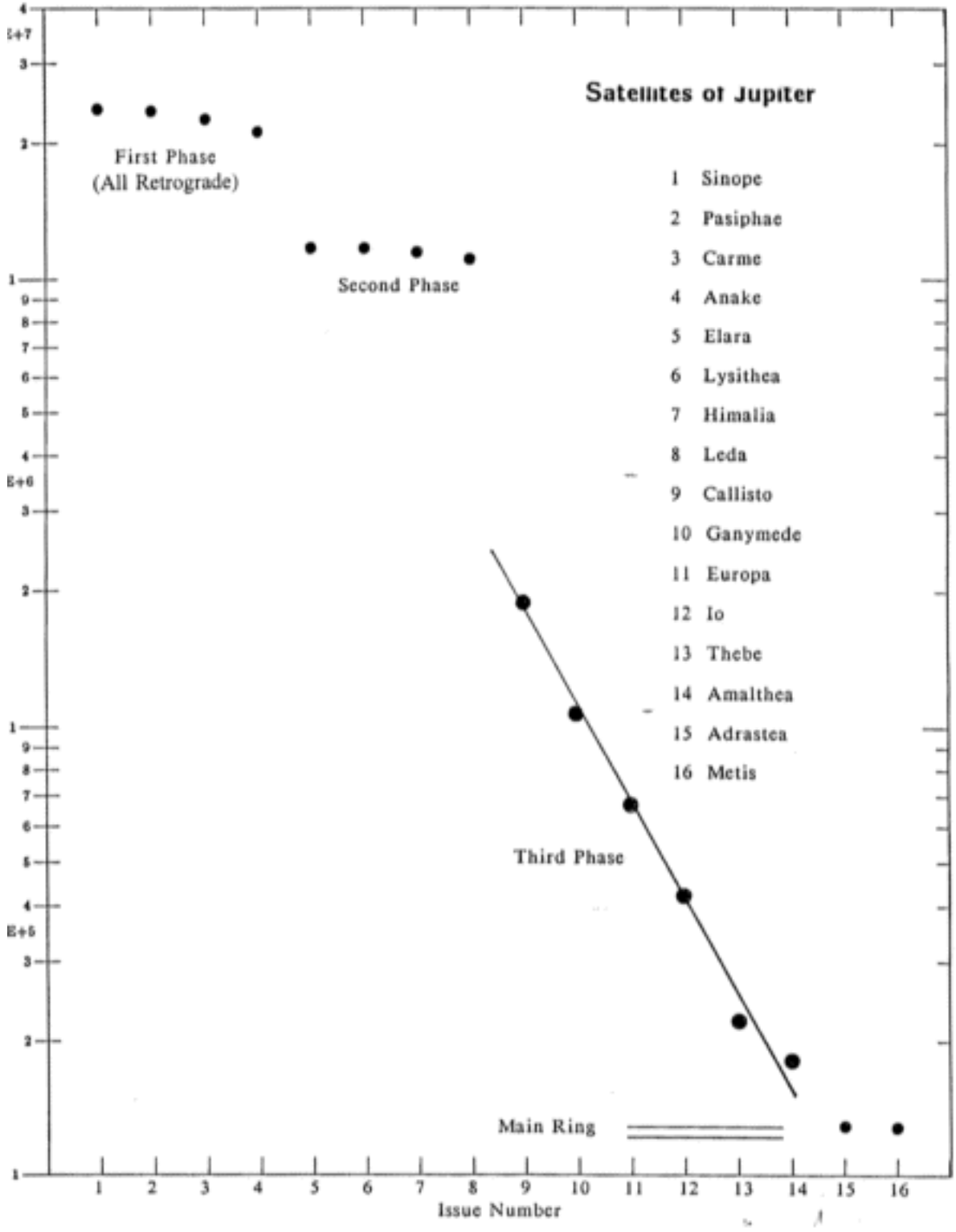
Our personal reaction to the findings that we have made in regard to the nature of our solar system with its ideal conditions for life on the earth, is that such a system is either unique or very rare.

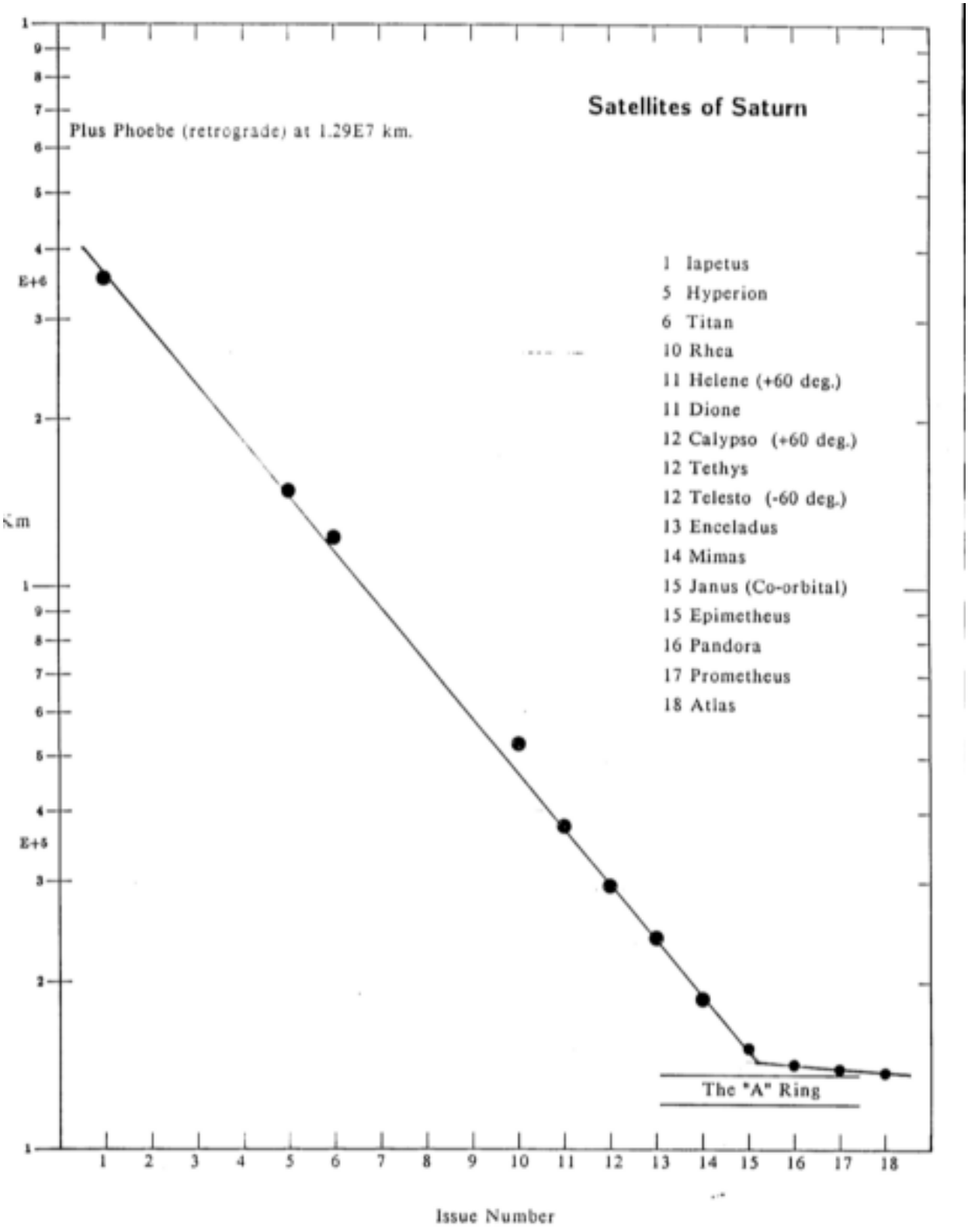

The Planets
Actual distances adjusted for eccentricity.
Model Formulas
Distance (1 to 7)=1.67568E+10*EXP(-.614970*I)
(Best-fit for 4,5 & 7)
Correlation Coefficient=.99998
Distance (8 to 11)=2.13055E+9*EXP(-.331639*I)
(Best-fit for 8,9 & 11)
Correlation Coefficient=.99994
Pluto
Neptune
Uranus
Saturn
Jupiter
(Ceres)
Mars
Earth
Venus
(missing)
Mercury
km
E+9
E+8
E+7
Deviation from Formulas. %
Pluto -38.9
Neptune -8.11
Uranus +8.38
Saturn -0.33
Jupiter +0.50
Mars -0.17
Earth -0.31
Venus +0.46
Mercury -0.15
Eccentricity Adjustment Factors.
Pluto .9375
(Ceres) .9941
Mars .9914
Mercury .9575
1. 2 3 4 5 6 7 8 9 10 11
Issue Number

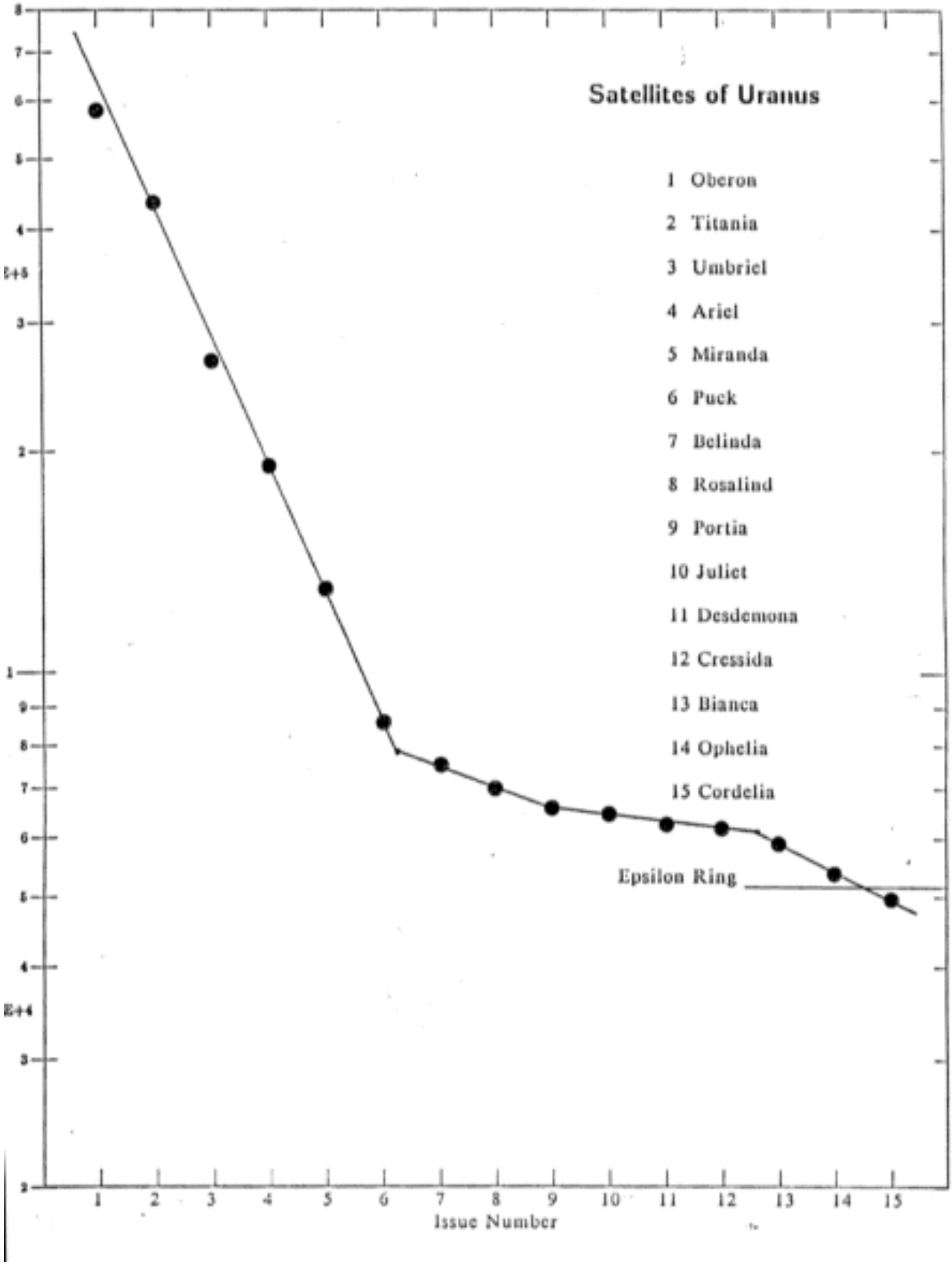

THIS GRAPH SHOWS THE PATH OF THE PLANETARY TRAIN
GENERATING THE
OUTER FOUR PLANETS

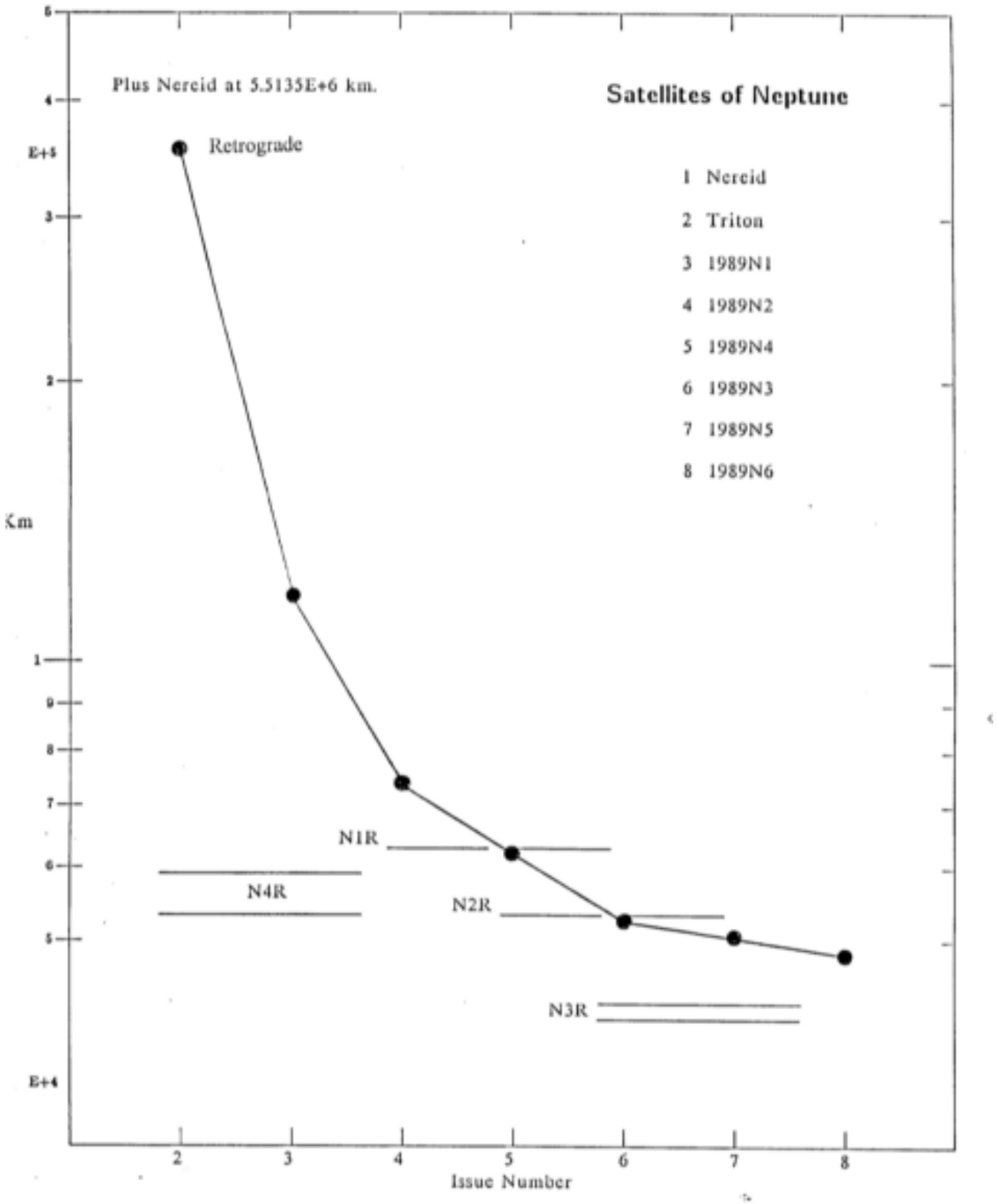
THE METHOD BY WHICH TRAINS GENERATE PLANETS OR SATELLITES

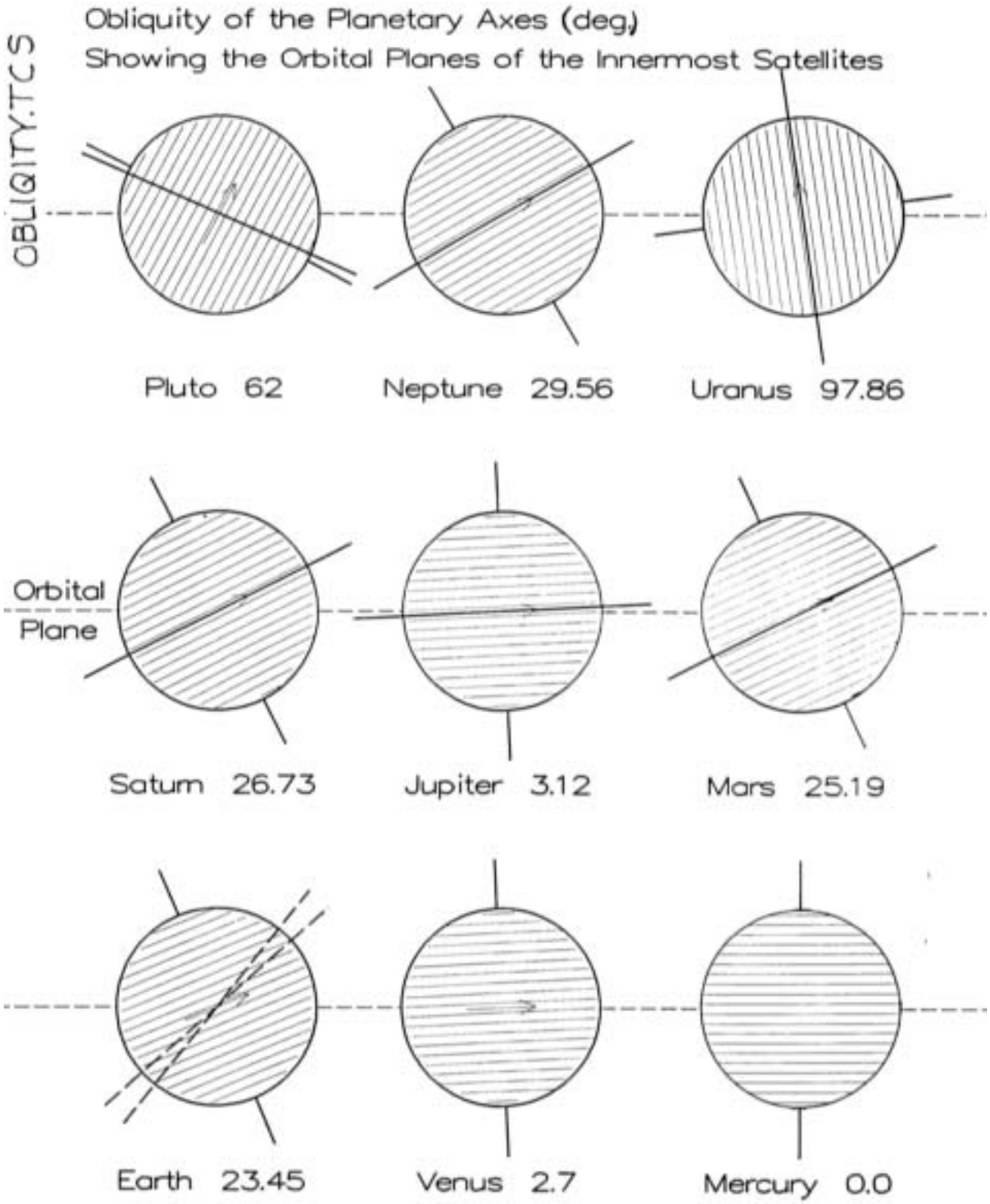



Satellites of Jupiter
First Phase
(All Retrograde)
Second Phase
Third Phase
Main Ring
1 Sinope
2 Pasiphae
3 Carme
4 Anake
5 Elara
6 Lysithea
7 Himalia
8 Leda
9 Callisto
10 Ganymede
11 Europa
12 Io
13 Thebe
14 Amalthea
15 Adrastea
16 Metis
Issue Number


Satellites of Saturn
Plus Phoebe (retrograde) at 1.29E7 km.
1 Iapetus
5 Hyperion
6 Titan
10 Rhea
11 Helene (+60 deg.)
11 Dione
12 Calypso (+60 deg.)
12 Tethys
12 Telesto (-60 deg.)
13 Enceladus
14 Mimas
15 Janus (Co-orbital)
15 Epimetheus
16 Pandora
17 Prometheus
18 Atlas
The "A" Ring
E+6
E+5
Km
Issue Number


Satellites of Uranus
1 Oberon
2 Titania
3 Umbriel
4 Ariel
5 Miranda
6 Puck
7 Belinda
8 Rosalind
9 Portia
10 Juliet
11 Desdemona
12 Cressida
13 Bianca
14 Ophelia
15 Cordelia
Epsilon Ring
E+5
E+4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Issue Number


Plus Nereid at 5.5135E+6 km.
Satellites of Neptune
Retrograde
1 Nereid
2 Triton
3 1989N1
4 1989N2
5 1989N4
6 1989N3
7 1989N5
8 1989N6
Km
E+5
E+4
N1R
N4R
N2R
N3R
Issue Number


OBLIQITY.TCS
Obliquity of the Planetary Axes (deg.)
Showing the Orbital Planes of the Innermost Satellites
Pluto 62
Neptune 29.56
Uranus 97.86
Orbital Plane
Satum 26.73
Jupiter 3.12
Mars 25.19
Earth 23.45
Venus 2.7
Mercury 0.0

Essay #8, by Arthur G. Gross ©2003

On the Fringe Sift of a Michelson Interferometer in a Gravitational Field

In our program for our ring model with ether velocity, we have assumed that the rings contract in the direction of ether velocity by the factor Rho in accordance with the Lorentz-Fitzgerald hypothesis, thus giving a zero fringe shift for a Michelson interferometer. Now to maintain this accord where there is also a gravitational field, we must then assume that a gravitational field does not alter the eccentricity of the rings of matter. Here the gravitational field of the earth would not be of significance as its effect would be equal in all directions and therefore self-compensating. It then follows that the rings of matter in the gravitational field of the earth alone remain constant with constant interferometer arm lengths. To then compute the fringe shift of a Michelson interferometer in the gravitational field of the Sun, we must determine the velocity of light in the following directions. C_e_s The velocity of the light going from the earth to the sun C_trans The velocity of the light that is transverse to a line to the sun. This is a two-way velocity. C_s_e The velocity of the light coming from the sun.

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THE VELOCITY OF LIGHT GOING TO THE SUN AT EACH OF THE PLANETARY RADII IS THE COSMIC VELOCITY Cc, WHICH IS = 2.99792459689E+10 cm/sec.

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EINSTEIN'S 1911 TWO-WAY TRANSVERSE SLOWING OF THE VELOCITY OF LIGHT IN A GRAVITATIONAL FIELD (C_trans)

Calculating Einstein's 1911 two-way transverse slowing of the velocity

of light in a gravitational field. Gravitational potential of the sun at the earth.
Phi_s_e = -G*M_sun/Au =-8.87209531409E+12
Delta_v_trans = Cc*(Phi_s_e/Cc^2) Transverse slowing of light.
Delta_v_trans = -295.941242927
C_trans = Cc*(1+(Phi_s_e/Cc^2)) Einstein's 1911 formula.
C_trans = 2.99792456731E+10
==========

VELOCITY OF LIGHT COMING FROM THE SUN (C_s_e)

Here it is apparent that as we have already assumed that gravitational forces are caused by a slowing of the ether flux particles transpiercing a central body, there will be a slowing of the velocity of light coming from the sun that decreases with distance from the Sun. As far as the zero fringe shift of a Michelson interferometer is concerned, we should be able to obtain it by assuming a slowing of the one-way velocity of light coming from the sun to be just twice Einstein's two-way transverse slowing. Under these conditions the average velocity to and from the sun:

$$(C_{s_e}+Cc)/2 = 2.99792456731E+10$$

The two-way transverse velocity is 2.99792456731E+10, exactly the same. Under these conditions the Michelson interferometer would show a zero fringe shift. This would mean that the formula for the velocity of light radiating from a massive body would be:

$$C_{rad}=Cc*(1+(2*Phi/Cc^2))$$

Here the variable is Phi, which is determined by a function of the radial distance from the center of the central body is:

$$Phi = -G * M / Rad$$

Note here that we are using the known zero fringe shift of a Michelson interferometer to derive the equation for the velocity of light radiating from a massive body.

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ON THE RELATIONSHIP BETWEEN THE GRAVITATIONAL POTENTIAL OF THE RING AND ITS SPIN KINETIC ENERGY.

At this point in our study we have arrived at the conclusion that our ring model in a gravitational field without ether velocity remains circular, as this is demanded by the known zero fringe shift of a Michelson interferometer. To determine the gravitational potential of the ring, which has been given the term 'Phi', we must know the mass of the central body 'M_sun', the radial distance of the point under consideration 'Rad(cm)' and the gravitational constant 'G'. The gravitational potential 'Phi(erg)' thereby becomes

Phi(erg) = -G * M_sun / (Rad(cm)).

Phi is always negative and represents the work required to move a unit gram mass at rest at the radius under consideration to out of the gravitational field A 'dyne' is the unit of force in the cgs system. An 'erg' is the cgs unit of work, equal to the work done by a force of one dyne acting through a distance of one centimeter.

==========

Here we are interested in the difference between the computed spin kinetic energy of the ring compared with the difference in the successive values of gravitational potential energy Phi(erg). At the various planetry radii the gravitational potential will change with a change in the planetary radius and the kinetic energy will change due to a change in Einstein's transverse slowing of the velocity of light. The question then is: Is the change in the ring kinetic energy equal to, but of opposite sign, to the change in the ring gravitational potential energy Delta_phi_(erg)?

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COMPUTING THE SPIN KINETIC ENERGY OF THE RING ELECTRON AT THE VARIOUS PLANETARY RADII.

In probing the nature of the orbital behavior of the planets about the Sun,

we found a very interesting relationship by replacing each of the planets with a ring electron. To then approximate the spin kinetic energy of the ring we first compute the kinetic energy of each of the four cardinal subparticles as the precise velocity and direction of each are known. We then assume that the average kinetic energy of these four represents the average kinetic energy for all of the subparticles in the ring. Then this average value multiplied by 472 becomes the approximate spin kinetic energy for the ring as a whole. As kinetic energy is a function of velocity, it is here where the velocities that we have already established enter in. That is, Einstein's two-way transverse slowing of the velocity of light in a gravitational field and our slowing of the velocity of light radiating from a massive body such as the Sun. Here transverse means in a direction that is perpendicular to the light coming from the Sun. Let us first determine Einstein's two-way transverse velocity of light in the gravitational field of the sun at the various planetary radii.

==========

COMPUTING EINSTEIN'S TWO-WAY TRANSVERSE VELOCITY OF LIGHT AT EACH OF THE PLANETARY RADII FROM THE SUN

Formula: C_trans = C *(1 + Phi(erg) / C^2)

Mercury	2.9979245355E+10
Venus	2.99792453908E+10
Earth	2.99792455141E+10
Mars	2.99792456031E+10
Jupiter	2.9979245743E+10
Saturn	2.9979245769E+10
Uranus	2.99792457846E+10
Neptune	2.99792457902E+10
Pluto	2.99792457925E*10

For our analysis, this means that our North and South Cardinal subparticles will have the reduced transverse velocities shown.

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THE VELOCITY OF THE LIGHT FROM THE EARTH TO THE SUN PRESENTS N0 PROBLEM AS IT IS OUR Cosmic Velicity Cc: 2.99924597E+10.

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COMPUTING THE VELOCITY OF LIGHT AT BOTH THE EAST AND THE WEST SUBPARTICLES FOR EACH OF THE PLANETARY RADII FROM THE SUN. ON THE INADEQUACY OF THE PARAMETER 'GRAVITATIONAL POTENTIAL' IN DEALING WITH THE PLANETARY ORBITS OF THE SOLAR SYSTEM AND WHAT CAN BE DONE ABOUT IT.

In the celestial dynamics of the past, where we have the planetary bodies in orbit about the Sun, the Gravitational Potential 'Phi(erg)' of each of these bodies has been defined as the work required to displace unit gram mass of the body out of the gravitational field. Although the concept of Gravitational
Potential is quite old, it plays little part in modern physical theory. We believe that the reason for this lies in its inadequacy. The formula given for Gravitational Potential is as follows:

Gravitational Potential: Phi(erg) = -G * M_sun / Rad(cm)

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COMPUTING THE GRAVITATIONAL POTENTIAL Phi(erg) AT EACH OF THE PLANETARY RADII FROM THE SUN.

Phi(erg) = -G*M_sun/Rad(cm)
G= 6.672E-8 Newtonian Gravitational constant.
M_sun = 1.989E33 gm Mass of the Sun.

Planet	Rad(cm)	Phi(erg)
Mercury	5.7909E+12	-2.29195214E+13
Venus	1.0820E+13	-1.22666051E+13

Earth	1.4960E+13	-8.87196903E+12
Mars	2.2479E+13	-5.90438492E+12
Jupiter	7.7833E+13	-1.70524914E+12
Saturn	1.4270E+14	-9.30095702E+11
Uranus	2.8696E+14	-4.62519712E+11
Neptune	4.4966E+14	-2.95166696E+11
Pluto	5.9001E+14	-2.24953232E+11

But here there is a reduction in energy that has not yet been taken into consideration, and that reduction in energy comes from a decrease in the kinetic energy of the planets due to the reduction in their orbita1 velocities that occurs with an increase in orbital radius. Our solution to this problem is that we are to add a parameter that we will 'call 'Orbital Potential' to compute the orbital aspects of the problem. Its function will be to compute the kinetic energy in ergs of a unit gram mass in orbit at each of the planetary radii

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COMPUTING THE ORBITAL VELOCITY OF EACH OF THE PLANETS IN CIRCULAR ORBIT ABOUT THE SUN

Formula: SQR (G * M_sun / Rad) in centimeters per second.

Mercury	4.787898E+6
Venus	3.502126E+6
Earth	2.978376E+6
Mars	2.492723E+6
Jupiter	1.305760E+6
Saturn	9.643472E+5
Uranus	6.800400E+5
Neptune	5.432544E+5
Pluto	4.742591E+5

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HERE IS WHERE OUR NEW PARAMETER 'ORBITAL POTENTIAL' ENTERS IN COMPUTING THE KINETIC ENERGY

OF A UNIT GRAM MASS, DUE TO ITS ORBITAL VELOCITY AT EACH OF THE PLANETARY RADII.

Energy = .5 * M * Vel^2

Mercury	1.146198E+13 erg.
Venus	6.132943E+12
Earth	4.435362E+12
Mars	3.106834E+12
Jupiter	8.525046E+11
Saturn	4.649828E+11
Uranus	2.312272E+11
Neptune	1.475627E+11
Pluto	1.000204E+11

Note here that the kinetic energy of each of the Planets is just half the magnitude of their Gravitational Potential, but of opposite sign.

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LET US NOW RECONSIDER THE PROBLEM OF THE ADVANCE OF PERIHELIA OF THE INNER PLANETS

In our study of 1993, we used our Rkf45rG programs to make our study. There we found that we could get good accord with the known values of advance of perihelia if we took into consideration the kinetic energy of the unit gram test particle. This was simply an assumption that appeared to work. But we now recognize that this kinetic energy is equal to the Orbital Potential that we are introducing, so our calculations regarding the advance of perihelia have already been made. Note here that our calculations are based on Euclidian space and the Newtonian concept of a uniform rate of time. At no time is a four-dimensional curved space-time involved.

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We thereby come to the final problem with which we are concerned and that problem is:

WHY DID EINSTEIN, IN GOING TO HIS GENERAL THEORY OF RELATIVITY, SWITCH TO A FOUR-DIMENSIONAL CURVED SPACE-TIME?

We now find that our answer to this question is quite simple, and that is that he failed to recognize that gravitational forces are propagated at slightly less than the velocity of light. This is a mechanism that only becomes apparent with the ether flux as the carriers of gravitational forces. Apparently in going to his relatively simplistic four-dimensional system, the time parameter was altered in such a manner as to adjust for the time required for the propagation of the gravitational forces. It is our contention that if the effect of the time delay in the propagation of gravitational forces were taken into consideration there would then be no need for a Four-dimensional Curved Space-Time in the ca1culations of General Relativity.