An appendix to my new system of fire and planetary life : shewing that the sun and moon are inhabited, and that they enjoy the same temperament as our earth / by Robert Harrington.

ſo united, or digeſted, that all their parts are more aſſimilated to enter into chyle; alſo another eſſential circumſtance is, theſe vegetable bodies, receive, in the proceſs, ſuch a quantity of the fire as animalizes them the more. Thus barley, from the proceſs of malting and brewing, receives ſuch a quantity of fire from the air in malting, and from the fire, in brewing, as conſiderably to alter its nature and qualities. But, in the Count's calculations he forges how much more eaſily a Bavarian ſoldier, from habit and from the climate, is ſupported with food, than an Engliſh ſoldier.*

* But pray, Mr. Cavendiſh, explain this experiment of Dr. Prieſtley's, in Vol. 4th, p. 36; alſo the note in page 33 of this Letter, upon the phoſphoric acid and the calx of lead producing inflammable air; but they ought to have produced dephlogiſticated air according to your theory.

In this Letter I have juſt examined your theory, principally in one department of nature, viz. reſpiration; but I am able to prove the ſame abſurdities in any of the reſt.

NOW, SIR, BEFORE I CONCLUDE, LET ME CALL UPON YOU IN THE MOST SOLEMN, AND SERIOUS MANNER, EITHER PUBLICLY TO REFUTE, OR ACKNOWLEDGE MY SYSTEM. BUT, IF YOU STILL CONTINUE *mute*, I THINK YOUR MOST PREJUDICED FRIENDS CAN BE AT NO LOSS FOR THE CAUSE.

I AM

Your moſt obedient and humble Servant,

ROBERT HARRINGTON.

Carliſle, JUNE 10, 1798.

FINIS.

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AN

APPENDIX

TO MY

NEW SYSTEM

OF

FIRE

AND

PLANETARY LIFE:

SHEWING THAT

THE SUN AND MOON ARE INHABITED,

AND THAT

THEY ENJOY THE SAME TEMPERAMENT

AS OUR EARTH.

BY ROBERT HARRINGTON, M. D.

LONDON:

PRINTED FOR T. CADELL AND W. DAVIES,

IN THE STRAND.

[*Dec.* 1798.]

APPENDIX

TO THE

NEW SYSTEM

OF THE

TIME

AND

PLANETARY LIFE:

BEING THE

SUN AND MOON

ABSTRACTED,

AS THE

TRUE CLOCK

OF THE

UNIVERSE.

BY ROBERT HARRINGTON, M.D.

LONDON:

PRINTED FOR THE AUTHOR, BY ADLARD,

BARTHOLOMEW CLOSE.

[Dec. 1792.]

AN

APPENDIX, &c.

AFTER the clear elucidation of my ſyſtem in my Pamphlet, it appears unneceſſary for me to enlarge further upon it. But we cannot place truth in too ſtrong a light, particularly where we have the prejudices of mankind to combat; and which are fixed by ſuch high authority as that of NEWTON, whoſe great and comprehenſive mind was certainly warped to eſtabliſh his ſyſtem of Gravity, otherwiſe, as a cloſe mathematical reaſoner, he could not have ſeriouſly advanced ſuch doctrine as this ſyſtem of his teaches. He ſuppoſed that the gravitation of the moon to the earth, at the conjunction, was decreaſed, and in conſequence the projectile force increaſed, the ſun greatly attracting the moon, and drawing her from the earth, which, as he thought, would account for the phænomena that take place at the conjunction. But then the ſame phænomena take place at the oppoſition, and inſtead of the moon being placed between her two great attracting bodies, viz. the earth and the ſun, ſhe is oppoſed to them; ſo that in reality the attractive power of the earth and ſun both draw in the ſame line: in conſequence the moon muſt be greatly attracted at the oppoſition; that is, gravitate towards thoſe bodies with both their forces or attractions.

When the moon is in her oppoſition, both the ſun and the earth's action of gravity draw in the ſame line, and muſt powerfully operate upon the moon. We will ſuppoſe with ſome, for the ſake of argument, with the force of thirteen degrees; and then in conſequence the moon muſt gravitate towards the earth with this conſiderable force. But at the conjunction the moon is placed between thoſe two gravitating bodies, viz. the ſun and earth. Then their forces upon it are divided. If the earth's power, according to them, is in the proportion of ten, and the ſun three; then at the conjunction ſhe will only gravitate to the earth with the force of ſeven degrees; and, according to Sir Iſaac's doctrine, the moon will be drawn from the earth in her conjunction, and account for her quicker motion, as at this period the projectile force predominates. But moſt unfortunately for Sir Iſaac's doctrine, the ſame phænomena take place at the moon's oppoſition. It there equally recedes from the earth; and alſo has its motion in the ſame proportion accelerated. And then, inſtead of its gravitation being leſſened, it muſt have it conſiderably increaſed, as the ſun and earth draw in the ſame line, according to the Newtonian doctrine. Then, according to reaſon, truth, and common ſenſe, its gravity muſt be increaſed in the proportion of thirteen to ſeven to what it is in the moon's conjunction. Nothing can be more obvious, clear, and juſt. It is ſcarcely neceſſary to elucidate it by a piece of iron being placed between two loadſtones of different powers: when they act in oppoſite directions, their force muſt be weaker upon the iron, as in the moon's conjunction, than when they act

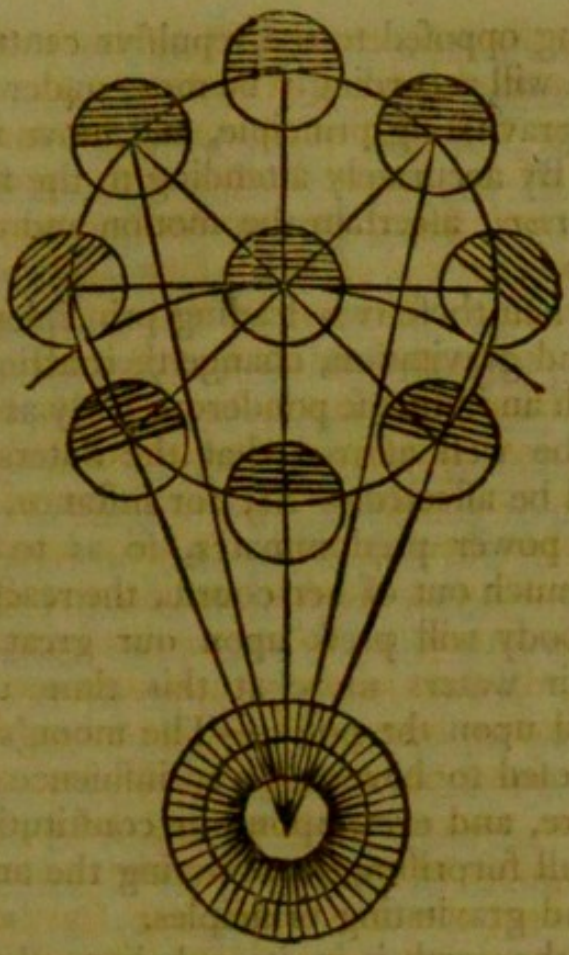
act in the ſame line or direction, as in the moon's oppoſition. Therefore, as this doctrine of Sir Iſaac's ſhews ſuch a contradiction to the phænomena, let us ſee if mine accords with them.

As I ſuppoſe the principal moving power is from fire producing repulſion; therefore, when it acts moſt powerfully, in the ſame proportion muſt the moon be repelled from the earth, and its motion accelerated.—At the conjunction, the moon's gravity to the earth muſt be greatly leſſened, ſo much ſo, that ſome (and particularly Mr. Baxter, author of "*Matho*,") have apprehended that either the parallax of the ſun is very different from that which is aſſigned by aſtronomers, or that the moon ought neceſſarily to abandon the earth, becauſe ſhe is conſiderably more attracted by the ſun than by the earth at that time.

But let us ſee if my ſyſtem can rationally account for theſe difficulties. In the conjunction the moon is oppoſed to the centre of the heated earth, and muſt in conſequence be greatly repelled, its motion being then accelerated. But to counteract that very great repulſion which would in conſequence take place, and alſo the ſun's attraction, which is ſo very conſiderable, the quantity of matter in the ſun being almoſt 230,000 times as great as the quantity of matter in the earth, and this point of equal attraction between the earth and the ſun is ſuppoſed about 70,000 times nearer the earth than the moon is at her change; therefore, under theſe circumſtances, the moon muſt undoubtedly leave the earth, and fall precipitately into the ſun. But, I ſay, to counteract this, there is the repulſive principle in the ſun, which repels the moon to keep her

her proper ſtation, counteracting both the earth's repulſion and the ſun's attraction. As the moon proceeds to her firſt quadrature, ſhe moves from the centre of the heated earth; and, upon going to the oppoſition, ſhe there oppoſes her heated centre immediately to the earth, which will produce a ſtrong repulſion; but not ſo ſtrong a repulſion as when oppoſed to the earth's heated centre, as in the the conjunction, the moon being a leſs body than the earth, conſequently will repel leſs, and, therefore, does not require the repulſion of the ſun on her other hemiſphere. Then, from the increaſed repulſion at the conjunction and oppoſition, which is ſo ſtrong as to move this immenſe body the moon, driving her a greater diſtance from the earth, increaſing her motion, and making her move ſwifter, we muſt be certain it muſt affect our earth. And as our waters being a fluid body, therefore eaſily ſuſceptible of motion, they are in conſequence greatly moved, the tides upon our ſeas being moſt conſiderable at that time.—We cannot help here expreſſing our admiration of the great wiſdom of God in ſo wonderfully adjuſting the movements of this ſatellite, regulating her motions ſo as to have ſuch happy effects upon our planet, producing the motions in our waters, ſo as not only to keep them from putrefying, but to be the great means of navigation.—To me an atheiſt appears a moſt groſs, ignorant, and abſurd character. Who can reflect upon thoſe moſt ſtupendous works, without calling out, *There muſt be a God!*—" *and that there is all nature cries aloud.*"

Now,



Now, to place my doctrine in a conſpicuous light to my reader, I have given him a drawing of the ſun, earth, and moon's motions, and he will there ſee, in the moſt ſtriking manner, that the moon's motion is accordingly as it is under the influence of fire, or repulſion. In her conjunction ſhe is directly over the centre of the earth, when heated by the ſun; at her oppoſition her own heated centre is directly oppoſed to the earth; and, as in mechanics the ſmaller or lighter body is the eaſieſt moved, it therefore will be the body upon which the repulſion will principally operate. As their ſituation changes from

from being oppoſed to the repulſive centre of each, the moon will accordingly be more under the attractive and gravitating principle, and move nearer and ſlower. By accurately attending to the figure, you may, *a priori*, aſcertain the motion and diſtance of the moon.

And when theſe two leading principles, viz. repulſion and gravitation, change their action, ſo as to move ſuch an immenſe ponderous body as the moon, we muſt be well aſſured that the waters upon our earth will be affected.—As, for inſtance, when the repelling power predominates, ſo as to move the moon ſo much out of her courſe, the reaction of the moving body will preſs upon our great ſeas, and drive their waters more at this time upon their ſhores and upon the poles.—The moon's motion is alſo ſuppoſed to have a great influence upon our atmoſphere, and even upon our conſtitution, which is not at all ſurpriſing, conſidering the amazing repelling and gravitating principles.

When the earth is in its aphelion, the moon is in her aphelion; and *vice verſa*, when the one is in its perihelion the other is ſo likewiſe. Now let us ſee if the ſyſtem of gravitation will account for theſe phænomena. When the earth is in its aphelion, it is ſuppoſed to gravitate with leſs force to the ſun. But we muſt here make this obſervation—What could produce its being leſs attracted by the ſun? The earth is not ſuppoſed to have loſt any of its matter at this particular period. But, according to this doctrine, as it is ſo conſtantly changing its diſtance from the ſun, it muſt be as conſtantly changing its gravitation. And, according to Sir Iſaac's theory,

as

as gravitation and the projectile force are uniform in their powers, why are the changes of its diſtance from the ſun ſo conſtantly varying? And alſo, which is ſtill ſtronger reaſoning, when the ſun attracts the earth with leſs force in the earth's aphelion, why ſhould the moon alſo at this period be in its aphelion; that is, gravitate with leſs force to the earth, and alſo have its motion accelerated?—In the cool diſquiſition of philoſophy, exempt from prejudice, I aſk the Newtonians why all theſe phænomena take place?

Now let us enquire why, according to my ſyſtem, theſe phænomena take place.—When the earth, in our ſummer, has its north pole turned towards the ſun, as ſo much more land is upon this pole than the ſouth, it will be in conſequence more heated, as I have proved. And from that cauſe its repulſion muſt be ſo much the more conſiderable, accordingly it will be repelled further from the ſun; and, in conſequence of its repulſion, its motion will be accelerated; ſo *vice verſa.*

Then, when the earth is more heated, it muſt act accordingly upon the moon, and repel it the more. And, therefore, it is worthy of remark, that the moon is at this time repelled ſo as to perform her circuit round the earth more expeditiouſly. So *vice verſa*, when the earth is in its perihelion, the moon is likewiſe in her perihelion, the earth being leſs heated at this time, owing to its having a greater proportion of its waters oppoſed to it, viz. the waters of the ſouth pole; therefore muſt in conquence repel the moon with leſs force.—But I will give you the phænomena, as allowed by philoſophers, with my explanation of them.

Now, as the moon is a body whoſe diſtance from the earth is conſtantly changing, for ſhe is always either drawing nearer or going further from us, let us inveſtigate the phænomena, and ſee whether my ſyſtem or Sir Iſaac's will beſt account for them. —We will take *the irregularities* of the moon's motion, and that of her orbit, which are ſo conſiderable, from the CYCLOPÆDIA.*

"*The irregularities of the moon's motion*, and that of her orbit, are very conſiderable. For, 1. when the earth is in her aphelion, the *moon* is in her aphelion likewiſe; in which caſe ſhe quickens her pace, and performs her circuit in a ſhorter time; on the contrary, when the earth is its perihelion, the *moon* is ſo too, and then ſhe ſlackens her motion: and thus ſhe revolves round the earth in a ſhorter ſpace when the earth is in her aphelion than when in her perihelion; ſo that the periodical months are not all equal."

When the earth is in her aphelion, it is from the earth of the north pole being ſo much more conſiderably heated than the water of the ſouth pole, there being a greater proportion of land upon the north than the ſouth pole, earth being ſo much more ſuſceptible of being heated than water, as the latter is an evaporable body, and flies off with the heat; conſequently there is conſiderably more ice upon the ſouth than the north pole: therefore, from being ſo much more heated, it will repel the

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* I have taken the phænomena from the CYCLOPÆDIA, a book of reputation, and which is ſuppoſed not to be partial to any hypotheſis.

ſun

ſun the more; but, as it is ſo conſiderably the lighter body, it will be moved, and repelled further from the ſun. Then, as the earth is more heated in its aphelion, it will in conſequence repel the moon the more, forcing her to a greater diſtance from it; and alſo quickening her motion. So *vice verſa* in her perihelion; as the repulſion is leſs, her motion will be ſlower, being more attracted, or drawn nearer to the earth.

" 2. When the *moon* is in her ſyzygies, i. e. in the line that joins the centres of the earth and ſun, which is either in her conjunction or oppoſition, ſhe moves ſwifter, *cæteris paribus*, than when in the quadratures."

Now this is clearly owing to repulſion; for in the conjunction the moon is immediately over the centre of that part of the earth which is heated; and in her oppoſition the centre of that part of the moon which is heated is directly oppoſed to the earth.

" 3. According to the different diſtances of the *moon* from the ſyzygies, i. e. from oppoſition to conjunction, ſhe changes her motion: in the firſt quarter, that is, from the conjunction to her firſt quadrature, ſhe abates ſomewhat of her velocity; which in the ſecond quarter ſhe recovers; in the third quarter ſhe again loſes; and in the laſt ſhe again recovers. This inequality was diſcovered by Tycho Brahe, who called it *the moon's variation*."

In the conjunction, as the moon moves from the centre of the earth which is heated by the ſun, ſhe will be leſs expoſed to its influence, and conſequently move ſlower and ſlower, till ſhe

begins to approach her oppoſition, being then what is called *the full moon;* that is, receiving the ſun's heat upon all her ſurface which is immediately oppoſed to the earth; therefore her heated ſurface will accordingly repel; and as this repulſion takes place, her motion will be accelerated. The waters upon our earth will alſo be moved; and this accounts in the moſt unexceptionable manner for the tides, which are the higheſt at the full and change of the moon; that is, at her oppoſition and conjunction.

That the planetary motions are influenced by repulſion, is proved indiſputably from the earth being repelled further from the ſun at that period when it is the moſt heated with the ſun's fire, as in our ſummer; the north pole having a greater proportion of earth than the ſouth pole, and being further repelled from the ſun at this period; whence it is that there are about eight days more in the ſummer half year, viz. from March to September, than in the winter, from September to March, from its performing a wider circuit in the heavens in our ſummer.

"The full *moon* appears to the naked eye broader than a circular object ſubtending an equal angle ſeen by perfect viſion. In a *moon* of three or four days old, the illuminated part appears too broad in proportion to the obſcure part, and likewiſe ſeems to extend more outwards, or to have a greater diameter than the obſcure part. Alſo, in an eclipſe of the ſun or *moon*, the bright part appears too broad in proportion to the dark part, and the eclipſe appears leſs than it really is;" which is accounted for by the moon returning her fire after it has undergone its

its uſual circulation in the ſatellite, which returning of the fire will produce that luminous appearance beyond the body of the moon.

I will not enter into the *minutiæ* of Sir Iſaac's doctrine of the ſun's influencing theſe motions of the moon; for, from what I have already ſaid, it muſt be unneceſſary. I think my ſyſtem muſt appear clear and obvious to every candid mind: but, if it wanted any aid, Mr. Herſchell's paper, in the *Philoſophical Tranſactions*, upon the ſatellites of the planet *Georgium Sidus*, would confirm it beyond all controverſy. This accurate obſerver has diſcovered that two of its ſetellites have two moſt extraordinary ſingularities. Inſtead of moving from weſt to eaſt, which all the heavenly bodies hitherto obſerved do, they actually move from eaſt to weſt; and this retrograde motion of the ſatellites is not in the plane of the ecliptic in which the other heavenly bodies move, but perpendicular to it, moving round in the direction of the planet's poles inſtead of the equator.

To attempt to reaſon upon theſe phænomena, either by Sir Iſaac's doctrine of the projectile force, or M. de la Place's moſt romantic idea of an imaginary atmoſphere, would be abſurd; therefore I will ſay nothing further, but ſee how far they corroborate my ſyſtem, and if it can account for them. As I have, I hope, proved that the elementary motions are conducted by the two great principles of motion in the univerſe, viz. repulſion and gravitation, and that the principle of repulſion is from the particles of fire repelling each other, and the principle of gravitation from the particles of matter attracting each other; therefore, when the planets

move

move round the ſun, or the ſatellites move round their planets, their motions will be from repulſion and gravitation. For perſpicuity, we, for example, will take our earth and moon. Our earth has its moon moving round it from the principle of repulſion and gravitation, from the fire and matter that the earth poſſeſſes; but its fire is not equally diſtributed, for its equator poſſeſſes a great quantity, and its poles very little; therefore its repulſion and gravitation will not be equally diſtributed, but its equator will have a greater repulſion, and its poles a greater attraction, from the latter poſſeſſing matter and ſo little fire. Now, bodies moving in the plane of the earth's ecliptic will be under the influence of its fire, and be conſtantly and greatly repelled; that is, repulſion in that plane will predominate; but bodies moving in the plane of the earth's poles, as they poſſeſs ſo little of fire, or the repulſive principle, gravitation will in conſequence predominate. Let us examine, when either of theſe powers predominates, what will be the motions of the planets. When one body is repelled from another, it will in conſequence turn from it; and the more it is repelled, that is, the more repulſion predominates over gravitation, it will be repelled the more; that is, be forced to a greater diſtance from the body. This we have ſhewn to be ſtrikingly the caſe when the greater body of the land is heated, as in our ſummer; the earth is conſequently repelled a greater diſtance from the ſun; and in our winter it is not ſo much repelled, when the ſun is over the ſouth pole, where there is proportionably a greater body of water, which carries off the ſun's

fire

fire by evaporation, and makes the ſouth pole be ſurrounded with ſo much more ice than the north pole.

Now let us conſider what will be the motion of a body when it is attracted by another body, viz. a planet and its ſatellite. When attraction predominates, it will turn to the body which attracts it, being drawn towards it. This, as we have obſerved, cannot be done at the equator, as there repulſion predominates. But it may be done at the poles, as there they poſſeſs very little fire comparatively, and in conſequence very little repulſion, and gravitation muſt predominate; which gravitation muſt have the effect of making the ſatellite turn to the planet, not from it. This is actually the caſe with two of the ſatellites of the *Georgium Sidus;* for, inſtead of moving in the ſame plane with the reſt of the heavenly bodies, they move in a different one; and that, inſtead of moving from weſt to eaſt, they move from eaſt to weſt, turning to the planet, not from it; which is moſt indiſputably by being principally under the gravitating, and not the repulſive principle. And another very ſingular circumſtance attends theſe ſatellites—they diſappear at a certain diſtance from the planet.—According to my ſyſtem they poſſeſs leſs fire than the other planetary bodies, matter and gravitation being the predominating powers, and not fire and repulſion; in conſequence, when they come near their illuminated planet, the *Georgium Sidus*, their weaker light will be overpowered.

I have not given all the *minutiæ* of the variations of the motions of the moon; but, from the general principles

principles laid down, aſtronomers will be able to ſolve them. At ſome future period I may probably be more minute.

Now I think ſuch a concatenation of ſtrong facts is *almoſt* equal to mathematical demonſtration, and muſt have due weight with the learned, enlightened, and candid world.†

Count Rumford produced a great quantity of heat from the attrition of iron bodies upon each other.—In my writings, particularly my Chemical Eſſays, I explain the whole proceſs; ſhewing, beyond a doubt, that a calcination is produced. His proceſs was not ſo well adapted to produce the calcination, as the machine was to tear off from one of the iron bodies large particles of iron, inſtead of rubbing it into an impalpable powder. But, if he will expoſe to great attrition a large proportion of mercury, with a ſmall proportion of lead or tin in it, it will give out a great quantity of heat, and be perfectly calcined, though the air and all extraneous bodies are perfectly excluded.——*See my new Experiments, with my Obſervations upon them, now publiſhing by* CADELL.

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† M. de la Place endeavours to ſhew that the acceleration of the moon's mean motion is the reſult of a gravitation decreaſing in the preciſe duplicate ratio of the diſtance inverſely. But how beautifully does my ſyſtem account for it. As the ſurface of the earth or moon is heated, in the ſame ratio is the moon repelled from the earth, and in conſequence its motion accelerated. Upon the common principle of mechanics, as it is puſhed or repelled from the earth, its motion muſt be increaſed.

FINIS.

EXPERIMENTS

SHEWING THAT

VOLATILE ALKALI FLUOR

IS THE

MOST EFFICACIOUS REMEDY

In the CURE of

ASPHYXIES;

(Or APPARENT DEATH by Drowning, &c.)

WITH

REMARKS

UPON THE

Advantageous EFFECTS produced by it in the BITE of the VIPER, CANINE MADNESS, BURNS, APOPLEXY, &c.

Tranſlated from the French of M. SAGE,
By THOMAS BRAND,
MEMBER of the CORPORATION of SURGEONS, LONDON.

Contraria contrariis curantur.

ARISTOT. Probl. 1.

LONDON:
Printed for J. BEW, N°. 28, Pater-Noſter-Row, and T. LEWIS, Ruſſel-Street, Covent-Garden.
M. DCC. LXXVIII.