

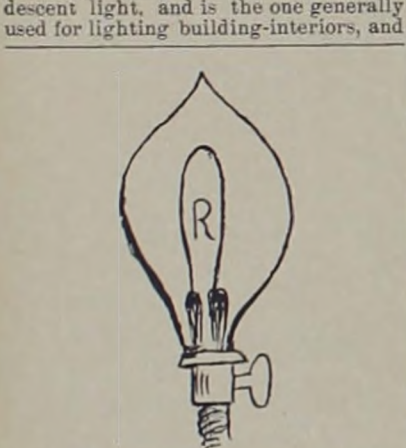
# HABITABILITY of the VARIOUS PLANETS.

The Comprehensive Views of a  
Student of Astronomy.

LETTER TO AN INQUIRING FRIEND.  
MY DEAR FRIEND R.: In your favor of recent date you refer to the discredit scientific men usually give to the statements in the Harmonical Philosophy that "the planets of space are inhabited," and ask in view of their mathematical conclusions, on which they base their denial, "for some evidence and reasons as to the fitness of light, temperature, and the law of gravity for human life and habitation on the various planets of our system and others."

In order to present this subject fairly, let us open our investigation by reference to an experiment in mechanics, the force of which will presently appear. Suppose we have a pipe one inch in diameter and one hundred feet long, leading horizontally from a reservoir of water. The current in the pipe will naturally run at a speed determined by the pressure. Now, let us shut off the water and sever the pipe midway in its length and unite the two severed ends with a short pipe of half an inch in diameter. In order that the long pipe shall again deliver the same amount or volume of water in the same time that it did before the small pipe was interposed, what would be the result in the smaller pipe? Evidently that it must run nearly four times as fast as it did before the diameter was reduced. The resistance offered by the small pipe must be compensated by a velocity of current that will permit in the same time the same quantity of water to be delivered. This will introduce us to another chapter that, by analogy, we shall be prepared to understand.

From a source of electric energy, a current, in common parlance, is sent over a wire, and, if the wire is large enough, the current is silent, invisible, and if the connections are perfect, is ordinarily inappreciable. There is a certain amount of energy moving through it, as we say, of a specific power. Now, if this wire be severed, as in the case of the water-pipe, and the two ends again united by a much finer wire, what is the result? It is this: The current manifests itself in the small wire by both heat and light, for the small wire carries all that the large one does, with perhaps a quadruple energy. If the current has sufficient electric-motor force the fine wire cannot carry it silently or invisibly, but this quadruple energy manifests itself in the most intense heat and light. This is called the incandescence of light, and is the one generally used for lighting building-interiors, and



often also called the "Edison Light." It is shown in the air-like loop R, in, or, what is better, the loop R, is made of an indestructible filament of chemically pure carbon, and is interposed in the regular circuit. The full current passes through this, although it is not larger than a fine horse-hair. It is made in loop-form, for convenience in concentrating the light in a space small enough for the glass drop used. Like the smaller water-pipe spoken of, this filament takes the full current, but less freely than the main wire does. Hence the heat and light manifested in this interposed wire or filament R, are intense, technically incandescent, and are the result of what in modern physics is termed "resistance." The amount of this resistance is measured in ohms, which represent the degrees of imperfect, interrupted or retarded conductivity that the particular interposed material, or medium, construction, offers to the passing current. The resistance which the direct current thus meets, results in both heat and light, and sometimes in sound, all in accordance with the material used and the quantity or volume of current. If this obstruction consists of a material of low resistance, or, in other words, if the filament is made of a material of low resistance, in *cavos*, it will accept under protest the full current of the main line, with a manifestation, as stated, of incandescence in the interposed carbon. The analogy here will open to us still another chapter relating to the law of action, when a current is obstructed, this time, however, in astronomical physics.

In the sidereal spaces—which include our system as well—the sun-rays emanate radially, or in every direction from all points of the solar body, as a center, and toward every point of an including imaginary sphere whose radius we will assume to be equal to, or greater than, the distance of the remotest planet of our system. These particular emanations from the sun that thus fill space consist of heat, light, electricity and magnetism, all in a mixed nascent, or undeveloped state. It is well known in optics that there is little or no interference or interfusion of rays that form a focus of any distant object; that each line or image-ray, so to speak, continues intact from its source. It remains uninterfused or unimixed with others when transmitted through a lens, so much so, that an image from an object quite distant is perfectly formed, even when foreign or interfering rays cross its path. In other words, I can see Mars with my telescope just as clearly when my friend's telescope, turned 90° from my point, gives him an object quite as distinctly, although his line of vision crosses mine coincidentally. The rays that form the two images do not interfere in the least. So, too, in the telephonic and telegraphic wire, or the return ground line, each electrical impulse is transmitted by itself, or, at least, it is

not merged or transfused into others, whatever the distance or direction may be. As in case of the electric circuit, if any obstruction or resistance occur in the path of this component, the magnetic energy from the sun, a change is effected and this change is manifested in local heat and light, a new form of energy, as compared with that of the original beam or ray. The original beam is complex, and contains many phases or modes of motion. Heat is the first manifestation, light is the next, electricity is the third, and, finally, magnetism. This is the approximate order, but not the exact scale, answering, however, for the present purpose. Herein is presented briefly the law or principle upon which all globes in space are furnished with heat and light for and congenial to humanity wherever found.

But this heat and light on each planetary body, it will be perceived, are a development by or through the mediation of the planet itself. Its fitness is more the result of meeting the obstruction or resistance of the planet, its influence, its envelope of atmosphere and electricity, than it is in the accepted bulk or mass attraction, or in distance from the sun, as is usually assigned for it. The planet's atmospheric envelope, its personal "field" of energy, acts as a transformer, a converter of the crude and mixed rays that enter it [the field], so that just such degrees of heat and light as humanity require are the result. The thickness or thinness of the atmospheric envelope, the distance from the sun, has much to do in modifying the amount of heat that people breathing such atmosphere require.

The sun rays, or beams, all pass through stellar spaces which are many thousands of degrees below our zero, and no heat, as we know it, could ever reach us through the millions of leagues of space so intensely cold. Hence the mathematical logic usually employed in this connection falls to the ground. Neither does light, its associate element, pass through space to us from the sun in the form by which we know it. But both heat and light pass as heterogeneous, unorganized or undeveloped forms of energy, so to speak; and are then translated into forms for action in the forms recognized, mainly at the sun's surroundings or surfaces of each planet. Now the beams, on reaching the earth's envelope or field, say, one hundred miles above the earth's surface, meet with organizing conditions by virtue of "resistance" or impact; this resistance in the path of the crude solar beam changes its end, wherever it is, and the beam determines the exact amount of heat and light the planet needs; which amount is, on the average, nearly uniform for the countless planets of space, should they be near to their sun, like Venus, or remote, like Saturn.

After the solar energy is thus translated from the nascent form, or that which traversed space, it becomes the congenial element of heat or light, which we daily recognize. Should the original beam of energy, by any possibility, ever touch us in its unconverted, or in the unmodified condition in which it leaves the sun, its destructive effect would be vastly worse than the heaviest electric bolt. But, instead, translation and distribution change its mode and effects, before reaching us, to a marvelous blessing. The electric-light circuit, small as it is, when compared with the circuits of the unlimited ocean of space, teaches the law and mode by which this heterogeneous energy, this allotropic form of light and heat, reaches a planet and is then transmuted to the requirements of life and being on its surface.

It is the converted external or surface heat accompanying light from the sun that we perceive mainly. This, however, is always supplemented by our own personal, and by the planet's self-evolved heat, the analogue of animal heat. Now, the animal would not maintain life very long, even if it lived in the warm sun, if this were his only supply. Neither would the earth, though acting as a "resisting terminal" for interrupting or arresting the rays, always maintain the necessary temperature for life upon its surface without the self-evolving heat from its own elaborating chemical processes. This planet-heat, which is nearly constant, supplements that of the sun, whence it was originally derived. The sun-heat is necessarily inconstant, or alternating diurnally and annually, which the earth's internal fires or chemism make direct or constant in effect, maintaining together a requisite standard of temperature for life and all its requirements. This unperceived evolution of heat acts much like the hair-spring of a watch, to keep the balance moving while the main source of energy intermits in winding, etc. Neither force would be complete or effective without the other. These unknown factors, once admitted, effect of temperature designed could not be maintained, either during the diurnal alternating sun-current or a mechanical uniformity of motion in the watch.

And here it may be remarked that the theory of gravitation to which you refer, as usually accepted, is not a theory entirely free from distrust, nor entirely applicable either to the movements of all planets or to the weight and fall of bodies on their surfaces, including the observed waters. The theory meets the observed facts in the earth fairly, but does not cover the phenomena, nor is it based on the real causes. However accurately the accepted law of gravitation and its effects have been presented in mathematical science for our earth, the formulae do not necessarily apply in other planets, or, if attempted, the theorist is led astray, for it is more by "fortuitous coincidence" than otherwise that the theory meets the conditions on our own planet; more particularly is this apparent with the phenomena of the tides, the cause of which is quite diverse from the theory taught of the sun's and moon's attraction, which, indeed, conforms very closely to accepted observation; but the theory is not based in absolute truth. There are many elements and factors not now admitted in the terms of the calculation that would modify or entirely change results of such calculations as to phenomena assumed to exist on other planetary bodies beyond the reach of accurate observation. These unknown factors, once admitted into the theory of gravitation, as they are sure to be when fully determined, will put the theory now assailable upon the basis of invincible truth. The fall and weight of bodies, or the theory of gravitation, as usually taught,

would not be applicable on a planet where coincidences do not tally, as they happen to do with phenomena on the earth. Besides, the atmosphere of a planet, and also the sun's magnetic relations to the sun in its revolution, have much to do in determining the nature of the tides and in modifying or maintaining gravitation. Electricity of space, also, which is very different from the observed element, plays a greater part in this mystery of revolution and attraction than is admitted theory suspects. Hence the usual reasoning upon the condition of other planets by inference or from the established or accepted premises that meet our own conditions here, do not give us a trustworthy solution of conditions existing in other worlds.

Yes, man's intrinsic nature is much the same on all the planets. Uniformity of his appearance, or of external conditions for the best development of his true nature, however, does not prevail during his physical or planetary life. Such conditions and development are attained only after he reaches the next stage of existence—the sphere of possibilities—yes, of certainties for maturity, where humanity from all planets finally assemble under superior environments. There, it is only the intrinsic qualities of his nature that survive the process of the new birth. The color of the Ethiopian, any distortion or physical infirmity of former birth or life, disappear in the new; it is mental and spiritual qualities only that endure this change.

As the great purpose of the planets is ultimately the unfolding of humanity in the physical vesture, when planets are sufficiently mature for it, approximately similar conditions must exist for this purpose on all planets in the intermediate portions of the solar system. The planets at either extreme of our system, however—Mercury and Neptune—are destined to be reconstructed, or more fully developed, as the ages unroll. But these extremes of the solar family in any system, represent childhood and old age, neither of which are the best fitted for this work of humanity-bearing. But the intermediate planets, like the intermediate zones of earth, the meridian of life, or like golden, matured fruit, as compared with green, unripe, or fallen and decayed, are always the most valuable, productive or perfect. Man is the sun, the object, the purpose, of the Universe, and, as all things tend to this, a certain uniformity of local adaptations is wisely designed to effect this end, wherever it is. The human planetary system may be situated, always excepting the immature or the senile extremes of situation as above stated.

This apparent digression shows the purpose, which is universal, of the illimitable Cosmos, this purpose being the unfolding of Man as a conscious being. Now, to return to the previous question: that the interruption or obstruction by the sun, or in space of the solar beam, or energy, in its light from the sun, is the same in principle, though on an illimitable scale, as that of the interrupted or the interpolated "resistance" in the incandescent, or in the arc devices in our electric light systems, and operates in like manner: the result being that heat and light are manifested in the planet, as they are manifested in the arc, or in the obstructing filament or the interposed air-space of the "arc," or in the obstructing planet. It is the distance from the sun, as astronomers tell us, that determines the amount of heat and light a planet receives and affords its inhabitants, but, as shown, it is the quality the planet and its atmosphere and magnetosphere have for arresting, absorbing and converting the crude solar beams received into the forms of required usefulness on the planet.

The accepted mathematical computations relating to the squares of distances as determining the amount of heat and light due to each planet, accurate as the computations are, prove nothing in reality as to fitness of the various planets for life, both animal and human. It is only accuracy in the process of computation. Such calculations, based upon restricted premises, which are assumed without sufficient philosophical reason. Therefore the assumption that a geometric or other decrease of heat and light, going from the sun, or an increase, as he is approached, omitting the principle or law above presented, is not fully warranted. In fact, it is totally incompatible with human development and its needs, and as the development of humanity is the ultimate object of all the countless orbs of space, the Great Good does not work in the way that mathematicians have thus far ciphered it out.

Permit me, in this connection, to add that the assumed red-hot condition of Jupiter, and also the assumption that the earth's moon—scientifically termed a "satellite," or a "world in decay," to which all reference was made in your favor, are both evidently erroneous assumptions. Jupiter has existed millions of ages longer than the Earth or Venus, and his surface has matured and ripened into its condition is vastly superior to all others within his orbit. Chipping here, too, has not accorded to Jupiter the maturity to which he is eminently entitled. I am satisfied that closer and more careful investigations than have yet been made regarding this royal planet will reveal, in the coming time, its true and superior condition; that it has for ages been eminently fitted for a race of people far surpassing in wisdom and intelligence any on our earth.

Evidently, the red-hot age of a planet occurs during its infancy. But gigantic Jupiter has had ample cycles of ages to attain his majority—to ripen, to mellow—until he has developed a condition I am aware of the generally accepted postulate that "any theory which most nearly meets all the phenomena observed may be taken as the true theory." But there are loopholes in the assumption that do not cover the absolute, and hence we are not always safe in freely accepting it, although it have the scientific ring. "It meets all the phenomena observed," but we know that there are many phenomena not observed. The fact that new things are constantly being discovered proves that scientific testimony is not perfect, neither are our own instruments perfect, what facts and laws thus escape detection have not been taken into account.

which, to men here on the Earth, would seem to be absolute perfection. Jupiter's original excess of heat was largely bestowed upon his four children when they left the ancestral homestead, to move in individual orbits as youthful satellites, around their majestic parent. Science has misread the signs in the heavens, when it asserts Jupiter to be red-hot to-day. Why, the Earth, many millions of ages younger, has itself long since passed that condition, and it is absurd to suppose that the Earth is more mature than its elder brother. And yet science thinks the crude Earth quite mature. Jupiter, red-hot, may be the scientific theory, but it is not in accord with the sublime plan and purpose upon which the universe is really based. Jupiter has lived as a planet more than compensates for his bulk, as compared with the Earth, to warrant perfect habitability as to temperature and every other physical need. But our moon is nearly at the other extreme of growth. It is not red-hot, however, nor is it sufficiently advanced to be habitable. But the offering of the earth, it is, in fact, less advanced than its parent, not yet having atmospheric clothing nor magnetic energy enough to arrest and retain solar pabulum sufficient to warm and enliven it to a condition of vegetable, to say nothing of animal or human development. These latter kingdoms will not appear on its surface for many long ages to come.

The outmost member of a sun-family, you are doubtless aware, is always evolved first, and in the eldest of the group, while the youngest member is the youngest. Now, both youngest and oldest are least fitted for the manifestation of the highest development—that of humanity. Saturn is in the meridian of his ripest age, and is nearest to perfection of all the planets in our solar family. There is ring-material around Venus, Earth and Mars, but whether it will take the form of a ring, first, or of one or more satellites in each case, is not yet determined; contingencies are numerous. The rings of Saturn will ultimately change to satellites, or to intermediate zones of earth, the meridian of his ripest age, and is nearest to perfection of all the planets in our solar family. There is ring-material around Venus, Earth and Mars, but whether it will take the form of a ring, first, or of one or more satellites in each case, is not yet determined; contingencies are numerous. 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## A Council of Peace.

James Campbell was a man with all power. He loved his home town, and he loved his people. He loved to gamble at cards over the place, with those he called whole friends and companions—he loved to be an excellent attendant on those evil games in such society he would for a fortnight forego his own pleasure there. When he had no farrow met a *seeming* friend, who, knowing the two slaves, lured him to a runabout where cards and game were played. There he drank the liquid poison, lost his money to the devilish influence; then he became a victim of knaves and sharpers who gambled, taking his money with a *seeming* reason. He started one night for his life, and was strangled by the neck on a tree in the night. He lacked the will power

I have been a constant observer of the modern spiritual movement for about forty years, and think I appreciate its nature and progress. It is the work of the angel world, and the puny subject of the material world is to be swept away sooner or later, while before its sway, and become as naught. So every real Spiritualist is awake to strengthen you in the grand work, for it is her and his work and privilege, and such feel it to be. I have noticed the eagerness with which the angels have sought the Master and brother to extend the circulation of THE PROGRESSIVE THINKER. I never before realized anything like it, and may each and all continue so to do, that it may become a household word everywhere; that all may have the greatest blessing of having helped to sustain our fellow-beings from within, and place them where they will realize the grandeur of the Deity, as understood by Nature, with the cobwebs of mystery, narrow creeds and selfish, short-angled human thinking forever eradicated from the man-made world. The movement has been concentrated to the name of the Deity. Col. Robert Ingersoll has very truly remarked: "An honest God would be the greatest work of man." For two thousand years the record shows that man has been formulating gods, and the new era of the new edge of Spiritualism reveals the reality of Deity in nature. J. H. WHITNEY  
New York.

Mrs. Annie Besant says she received letters from the late Mme. Blavatsky. Herbert Spencer is considerably proved in health, once more hard work on his philosophy in a little house on the edge of Savernake forest.

The Marquis of Aylesbury has been the steward of eleven ecclesiastical "livings" as they are called, and the equally notorious Lord Londsdale has been the steward forty.

The Dam Rong, a brother of the King of Siam, is about to visit England.

hermion) used to print his "cycles" and "harmed terms" and "perturbations" the sure sign of earthquakes" in this journal during the administration of Gerard Hallowell, nearly fifty years ago, and the present editor-in-chief, too young then to have been a student of the great natural philosopher, was disposed to make fun of the predictions. One day, to establish the truth of his prognostications, the "Brooklyn Sage," as he was often called, produced a diary in which he had recorded, in a bulky but preposterous manner, all the "signs" of earthquakes, earthquakes, earthquakes, and seismic atmospheric perturbances. Mr. Hallowell had kept in a drawer the clippings descriptive of all such phenomena, and he was challenged to produce them, and see if they had not been foretold and the account anticipated in the weekly records of the "Brooklyn Sage." Telegraphs and ocean cables to give instant notice of such occurrences, and if the writer in Brooklyn put down under date of March 4, "perturbation—probable earthquake in South America," or "signs of a hurricane in the China seas," and the daily records of the "Brooklyn Sage" brought an account of such upheavals or disasters, the skill of the observer was firmly established. Sure enough, the volume stood the test in a most remarkable manner. Out of twenty-three actual earthquakes, twenty were predicted in the book at the corresponding date. Out of seventeen fierce storms, notable for the damage they had caused on land or sea, fifteen had been predicted. The old man closed his book with a smile of triumph, and a "seafaring sailor" uttered his mild rebuke of our incredulity.

We remembered the saying of an old scientist who ridiculed the faith in dreams, and was asked if none of his dreams had come true. He replied that in his long life he had waked with the remembrance of over 30,000 dreams. These only five came true, and the connection therefore failed for want of evidence. It occurred to us to test the "Brooklyn Sage's" predictions, and the predictions had been made that had counterpart in history. So we sat behind a desk, and forlornly our eyes behind a desk, we turned its pages. Our suspicions were wonderfully confirmed. The very day in the week and the year in which some atrociously

William B. McCreery, United States Consul at Valparaiso, Chili, who has furnished the State Department with the only reliable official information it has received since the crisis in Chilean affairs, began in a Michigan man who arrived there credit during the war for the United States, and was one of the few men who succeeded in escaping from the Alcatraz prison. He was a member of the Liberty party that regained freedom by tunneling.

John Mackay has none of the gorgeous tastes of his fashionable wife, and carefully abstains from giving any outside appearances of his vast wealth.

One more toward building up the city of Sumnerland than any other man, excepting the proprietor, H. L. Williams; not financially, but by his untiring efforts in the cause of Spiritualism. Sumnerland could not well part with him. He was one of the first on the ground, and has put forth every effort to make the colony successful.

Next month, Sept. 5, the annual camp meeting will begin and continue one month. This will bring in many who will see the "bulls" and hear of Sumnerland's future, and certainly very promising. People coming to California should certainly visit Sumnerland.

—S. C. C. (Cal.)

—S. C. C. (Cal.)

Call L. F. MERRILL

Senator W. H. Washburn, of Minnesota, who is said to be the biggest flour producer in the world, is a Maine man, and worked on a farm in that State till he was twenty years old.



