

Correspondence.

Astronomical Theories by an Amateur.

To the Editor of the SCIENTIFIC AMERICAN.

I have an idea in the shape of an astronomical theory, which I would like to unfold, but before doing so, desire to make a brief comment on the liberties astronomers generally take in their theories, by withholding such facts as would tend to cast a shade of doubt on the ideas they put forth.

As an example, take the article in your issue of September 22, by Prof. Lewis Swift, on the subject of the moon. He says the moon has no atmosphere, that it at one time had an atmosphere, which has long since been absorbed by the planet itself.

He does not state why he thinks no atmosphere exists on the moon, but I understand this theory is based upon the fact that none has ever been observed. When a star approaches the disk of the moon, its apparent position in the heavens is not affected by refraction, as would be the case if the moon had an atmosphere. Now, it is a fact rarely mentioned, never dwelt upon, that the moon's atmosphere, if any exist, is very small. It should be in proportion to the moon's bulk as the earth's atmosphere is to the earth's bulk. Astronomers give us no figures as to the size of the atmosphere with which the moon, at this ratio, should be endowed, and the mathematics involved in a computation of this kind is far beyond my caliber, but in round numbers let us assume the earth's perceptible atmosphere is what it used to be, 45 miles high, and that the moon's atmosphere should reach one mile above its surface. The pressure of such an atmosphere at the moon's surface would be less than 1.5 of a pound to the square inch. It would require a delicate instrument to measure the refraction produced by such a thin atmosphere, and letting the proposition rest as it is, it seems to me an assumption indeed to assert that the moon has no atmosphere.

Now, let it be borne in mind that the moon ought to have an atmosphere at the present time, and that if it were not for the fact that it cannot be seen, we would never believe the moon to be so cannibalistic as to devour her own air. But, is it not a fact that the moon's atmosphere, if it has one, would be attracted by the earth in the same manner as the earth's atmosphere and water is attracted by the moon, and in a far greater degree, owing to the earth's greater bulk, and would this not cause almost one-half of the moon's atmosphere to be accumulated around the center of its face presented to the earth, while the other half of the atmosphere would be concentrated on the other side?

The moon causes our tides. If the moon were larger or the earth smaller, these tides would be greater. The earth has a greater attraction for the moon's atmosphere than the moon has for the earth's, and the moon has less attraction for its atmosphere than the earth has for hers. Therefore the atmospheric tides of the moon are enormous; and it is not at all improbable that no atmosphere whatever remains around the edges of the moon's disk, to affect the position of stars eclipsed.

If astronomers can take such liberties with facts in their theories, why not allow a fellow like me a few flights of imagination in a little theory of my own? I believe the main difficulty in presenting a theory is in introducing it. As soon as the wise man reads the proposition he laughs at its absurdity, and rarely proceeds to the arguments put forth to sustain the theorist's position.

You can laugh if you wish, but I have discovered a new planet. I have never seen it any more than Prof. Swift has seen the moon's atmosphere, but it exists all the same. I cannot tell how large it is, but it is pretty big. I will tell you all I know about it:

It belongs to the solar system.

Its orbit is identical with the earth's.

It travels around the sun in the same period of time as the earth.

It sometimes approaches within 184,000,000 miles of the earth. Sometimes it is 190,000,000 miles away from the earth.

It is always in syzygy (I got that word out of a book) with the sun and earth.

The sun is always between this planet and the earth; hence it can never be seen from the earth. But it can be seen from other planets, and perhaps some day, when we have established communication with Mars, we will know more about it. Until then we can only know it is there.

There were gay times on this new planet in 1839, which I intend to tell about.

You know Biela's comet used to make the run from a point out beyond Uranus' orbit to the point which the earth passes November 13. It made the round trip in six and two-thirds years. This comet once had regular habits. It was seen several times prior to 1839, and would have been seen in that year if the position of the sun had not interfered. In 1845-46 it was seen, or rather "it were seen," as the comet was then a double one, each part complete in itself, the two being

separated by more than 100,000 miles of space. In 1852 the parts were again observed, and had separated to a distance of more than 1,000,000 miles. This was the last seen of them, and with the exception of a few shooting stars in November, we may never hope to see the same again.

The cause of this comet's behavior has puzzled more than one astronomer, and if you would read the various theories propounded, you would die laughing.

Sir John Herschel said: "Can it have come into contact with some asteroid as yet undiscovered, or peradventure plunged into and got bewildered among the rings of meteorites, which astronomers more than suspect?"

Mars, Jupiter, Saturn, Uranus and the larger asteroids were at the time quite distant from the comet's course.

Nevertheless, the comet parted, and my opinion is it did not part itself. The comet was seen for the last time in 1852, when it reached perihelion September 23. The astronomies to which I have access do not state when it reached perihelion in 1845 or in 1832, so I have to figure from the data I can obtain. It made the round trip in six and two-thirds years; hence in 1839 it would reach perihelion about May 23, i. e., on May 23, 1839, the comet was where the earth would be on November 13. On the same date the new planet would be at the point which the earth passes November 22. Hence a given point in this great solar system is passed by two great bodies nine days apart, the planet having traveled 13,000,000 miles in the interim. Lessen this distance somewhat on account of the attraction which probably exists between all bodies, take into consideration the fact that the comet is traveling in the same general direction as the planet, that its speed is probably sufficient to enable it to overtake the planet in less than twenty-four hours, then get out of the way and prepare for a disintegrated comet!

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Jacksonville, Ill., Sept. 24, 1894.

Cycling.

The Academy of Medicine of France has taken up for discussion the subject of cycling and its effects on health—the first occasion of the kind in a society purely medical, although one of the greatest moment. It is a singular fact that the learned of the French profession should have led the way in this matter, seeing that the art and practice of cycling have gained so remarkable a place in this country; but it is satisfactory that the subject has been started, for few of medical import are more deserving of study and discussion. In the Academy Dr. Petit—good historical name—opened or took a leading part in the debate. He had met with three fatal cases of persons suffering from heart disease in whom death seemed to be accelerated by the practice of cycling. He also argued that as in the streets of Paris there are at the present time no fewer than 100,000 persons who ride on cycles, and that among these there must be one in every 100 suffering from cardiac disease, the danger of cycling is much greater than is generally supposed. In the young this danger will be, to some extent, minimized; but in persons of middle age, like those to whom Dr. Petit specially referred—one of whom was sixty years and the two others forty years old—there must be a maximum of danger from the pursuit. He held also that among the young who were not suffering from actual cardiac disease the excitement incidental to traveling through the streets of a crowded city, in the midst of the most varied traffic, was of necessity attended with bodily risk, both from external collision and from internal strain and injury.

The testimony thus borne is specially valuable to ourselves, owing to the part which, through good and bad report alike, we have uniformly taken in this controversy. It is many years now since we entered the lists, always with a certain approval of cycling, always seeing that it had a great future before it, always observing that within certain reasonable limits it aided largely as a sanitary pastime, bringing health to those who by its means found themselves able to escape from the close and vitiated air of town life into the pure and life-giving air of the meadows and open fields, and always admitting that in some carefully selected cases of disease it afforded even a method of, or an aid to, successful treatment. We expressed recently what we hope was, and what we think most people have conceded to be, the common sense of the argument. We have warned, as Dr. Petit has warned, riders of all periods of life to be moderate in their application of the pleasure, or pastime, or competition, or work, of cycling.

We have admitted that many of the experiences that have been learned about cycling are among the marvels of the century—the attainment, for instance, of an art that enables a man to compete, not with a horse, but, far beyond that, with a steam engine, coursing away at twenty-five miles an hour. We have treated on some advantages of cycling to the aged, and have shown that the muscles of an octogenarian can be redeveloped to a great extent by the exercise. We have honestly admitted every word that can fairly be spoken

in favor of the exercise. But we have given equally honest attention to its faults and dangers, and we shall continue to do so, assured that the profession and the public at large will listen to what we hope is a judicial and altogether unbiased expression, until through the whole of the cycling community sensible reforms and moderate counsels have asserted their power over dangerous competitions and unrestricted enthusiasms.—London Lancet.

Universal Athletics.

From the United States sport has spread throughout Europe; it has gained a firm footing in France, Belgium, Holland, Germany; it is rapidly instating itself in Hungary, Italy, Spain, Switzerland. Upon all rivers glides the light race boat, upon all roads runs the bicycle, and football forces an entrance into all collegiate establishments. The same sun in the course of twenty-four hours lets its light fall upon a boat race in Australia, a football party in Uruguay, and the carriage of President Kruger on his way to Pretoria, Cape Colony, for the celebration of I know not what great occasion, under the escort of eighty bicyclists. It was not without struggle, or at least without protestation, that this conquest of sport was made. Many opponents endeavored to check it and scorned its title to recognition. To some it seemed treason against patriotism; they considered sports as the product of English civilization, because it was in England that they reappeared in the nineteenth century, and the opponents imagined naively that what is called "English sport" must tend to produce Englishmen, or at least Anglomaniacs. In reality, it is but the expression of a human principle, old as the world, and results from the twofold existence in man of spirit and muscle. If there had been two Adams in the terrestrial paradise, I can imagine the first saying to the second, "Let us try our strength; I believe I can run faster than you, jump higher, strike harder." And after their first contest I can fancy the vanquished Adam shaking hands with the victor and then going away to train himself to be in his turn the conqueror.

The much-vexed question of amateurism and professionalism as connected with sports has not yet been settled. Floods of ink have been used in this quarrel without as yet seeming to bring it any nearer to solution. The problem in a modified form existed in old Olympia. In all time some have run for gain, others for pleasure; some have sought money, others glory. But this modern civilization has singularly complicated the matter. Sporting has now become a career; it has its colors, its jockeys, its trainers, and the deplorable betting of the crowd concerning it is one of its regular features. Sporting can only produce good moral effects, can, indeed, maintain its existence, only as it is founded upon disinterestedness, loyalty, and chivalric sentiment. The ancient amateur struggled for a simple branch of wild olive, and law excluded from the contest all the unworthy, all those in whose lives there were any misdemeanors. We are no longer in any danger of seeing the arena transformed by a passion for blood, or the better exhibitions of the stage replaced by the bestialities of the old circus; but there exists as the great corruptor of the present day, as the eternal enemy of all puresport, the greed for money. Contests in their best form ought to be carried on without any thought of gain. Fencing attests that it is not impossible to reach a high ideal in sports which are absolutely freed from this incentive. A fencer very seldom receives even a medal as his gage of victory. It is thought that to be simply declared victor carries in itself the highest recompense which can be decreed him, the only one which the hand that holds the sword can accept.

At intervals of four years it is hoped that the twentieth century may see its youth assembling at the great capitals of the world in order to contest with force and skill for the symbolic branch. Without doubt, there are many obstacles to overcome before this new departure shall be reached, among which are, as we have just seen, customs, traditions, race instincts, and all the peculiarities which sporting life borrows from climate, from legislation, from circumstances. But, note well, it will not be necessary to renounce all of these; it will be sufficient to make some sacrifice as to details here and there and to show a little good will toward the international committee which is going to undertake this great work and to attempt to institute in six years the first international contest. Modern, very modern, will be these restored Olympian games. There is no question of reviving the old-time dress and manners; and those who suppose that it will be upon some sacred hill and to the revived tones of the "Hymn of Apollo" that the contest will be waged have only their own imaginations to thank for the mistake. There will be no tripods, no incense; those things are dead, and dead things do not revive. It is only the idea embodied in them that can revive, and it must be adapted to the needs and the taste of the present age. From antiquity we seek to establish only one thing: relaxation, blessed relaxation, which the Greek nations welcomed in order that they might contemplate lasting youth and a future.—Chautauquan, from the Revue de Paris.