IOSR Journal of Applied Physics (IOSR-JAP)
e-ISSN: 2278-4861.Volume 10, Issue 4 Ver. II (Jul. – Aug. 2018), 45-53
www.iosrjournals.org

The Hydrostatic Force (F_H) of Gravity (The Atmospheric Force of Gravity)

Mahmoud E. Yousif
Physics Department - The University of Nairobi, P.O.BOX 30197 Nairobi-Kenya
Corresponding Author: Mahmoud E. Yousif

Abstract: *The volume of air extending 100 km above the earth, formed a pressure on everything on the surface of the planet, this atmospheric pressure is suggested to represent the factor behind the weights, and as an important factor in aerodynamic lifting the airplanes and birds; it also formed the Hydrostatic Force (F_H) of gravity, or the Atmospheric Force of Pressure (F_P), which is suggested to represent the force which brought down Newton's apple from the tree, and forced different objects and creatures on the surface of the planet to be regulated by its pressure, the mathematical formula and magnitude of the force is derived; the model is presented as a replacement to Newton's gravitational law in relation with the planets.*

Keywords: *Hydrostatic Force (F_H)* of Gravity, *Gravitational Force**;** Atmospheric Force of Pressure; The Hydrostatic Force of pressure*.

Date of Submission: 28-07-2018 Date of acceptance: 12-08-2018

I. Introduction

The Hydrostatic Force (F_H) of Gravity, or the Atmospheric Force of Pressure (F_P), is a different interpretation to the force causing humans and objects to be stable and regulated by force of pressure on this planet, it's thought since memorial that the force of this stability emerged from the center of the earth, as lately been represented by the Gravitation force of Sir Isaac Newton [1], but the gravitational force is the least known force among the four forces of nature [2], the lack of mechanical explanation of gravity, was one of the most challenging problems for those who accepted it as paradigm [3], the gravitational force is defined as "*a force that attracts any two objects with mass*," its *attractive* because it always tries to pull masses together, it never pushes them apart [4], due to the lack of known mechanism, gravity mainly interpreted as an innate attraction between every pair of particles of matter [3], which could justify the above statement that its "*a force that attracts any two objects with mass*," but the strength of the formula forced Feynman concluded that "*there is no model of the theory of gravitation today, other than the mathematical form.*" [1], based on this mathematical formula, and according to Newtonian mechanics, gravity provides the centripetal force responsible for astronomical orbits [5], it's recently been discovered that, the constant *G* thought to be an empirical physical constant [6] involved in the calculation of gravitational effects in Sir Isaac Newton's law of universal gravitation [7] and in Albert Einstein's general theory of relativity [8], is not an empirical constant, where the followings findings emerged [9]:

- The constant G, got its own formula, consisting from the multiplication of the *radial distance of a planet by the square of its orbital velocity, divided by the mass of the central body (sun),* which can derived slightly different value for any planet.
- When the G constant in the gravitational formula is substituted by this formula, it removed the central mass (sun), one of the radius and added *square of its orbital velocity*, thus transforming the gravitational formula into a Centripetal Force (F_C) formula.
- Therefore, using the digit for constant G caused an internal elimination of the gravitational elements and transformed the gravitational formula internally into Centripetal Force (F_C).
- The comparison between Newton's gravitational formula with the Centripetal Force (F_C) formula, for the solar planets give results ranging between 98.4204% for Saturn to 102.0448% for Mercury, which could reach 100% if proper G constant is used, meaning we are using the Centripetal Force (F_C) formula for any calculation.

- Based on these findings, we concluding that, the Newton's Gravitational Law is wrong [9].

The Newton's Gravitational Law, have been in usage for the past three centuries and many advancements took place during that period, they were thought due to the gravitational force, but how can we differentiate between it and the Centripetal Force (F_C)? The only acceptable means is to measure the gravity by a device, but the failure to invent a suitable device doesn't means a failure in creativity to invent an instrument, rather it means

the nonexistence of the gravitational force; arriving to this conclusion, then what is the alternative, causing apple to fall?

In this paper we suggested the first of the two mechanisms, the Hydrostatic Force (F_H) of gravity, or the Atmospheric Force of Pressure (F_P), that stabilized activities within the planet atmosphere; it will be followed by the Electromagnetic Force (F_{EM}), which stabilized planets and their motion in specific orbits around the sun. We all know the Atmospheric Pressure, and its force, which was greatly neglected in relation with the stability of different species in this planet, and this as a suggestion; required more studies about this important factor in human existence, the role of which was wrongly misplaced.

II. The Gravity Verse the Atmospheric Force

The existence of atmosphere in the planet earth is something unique; the atmosphere of the Earth consist from layers of gases, commonly known as air, that surrounds the planet, the atmosphere mass is about 5.15×10^{18} kg, three quarters of which is within about 11 km of the surface, it becomes thinner with altitude, with no definite boundary between the atmosphere and outer space, but the Kármán line, at 100 km, or 1.57% of Earth's radius, is often used as the border between the atmosphere and outer space [10], the atmosphere has mainly 4 layers: the troposphere we live in near the surface of the earth; the stratosphere that houses the ozone layer extended from 12 to 50 km; the mesosphere, a colder and lower density layer with about 0.1% of the atmosphere extended from 50 to 80 km; and the thermosphere, the top layer from 80 to 700 km, where the air is hot but very thin [11], a fifth layer named Exosphere extended 700 to 10,000 km [10], many astronomical objects in the Solar System have atmospheres, these include all the gas giants, (Jupiter, Saturn, Uranus and Neptune), as well as Mars, Venus, and Pluto, several moons and other bodies also have atmospheres, as do comets and the Sun [12], or the 8 planets and over 160 moons in the solar system all have significant atmospheres [13], the major constituents of Earth's atmosphere, are nitrogen (78.084%), oxygen (20.946%), argon (0.9340%) and carbon dioxide (0.04%), while water vapor accounts for roughly 0.25% of the atmosphere by mass [10], the atmospheres of the Earth, Venus and Mars primarily formed as a result of volcanic gas emissions, although the evolution of these gases on each planet has been very different [13], in all the nine planets in the solar system, the earth is the only planet with atmosphere suitable for life as known in our planet [10], astronomical bodies retain an atmosphere when their escape velocity is significantly larger than the average molecular velocity of the gases present in the atmosphere [13], suggesting that the existence of the atmosphere is irrelevant to the gravity.

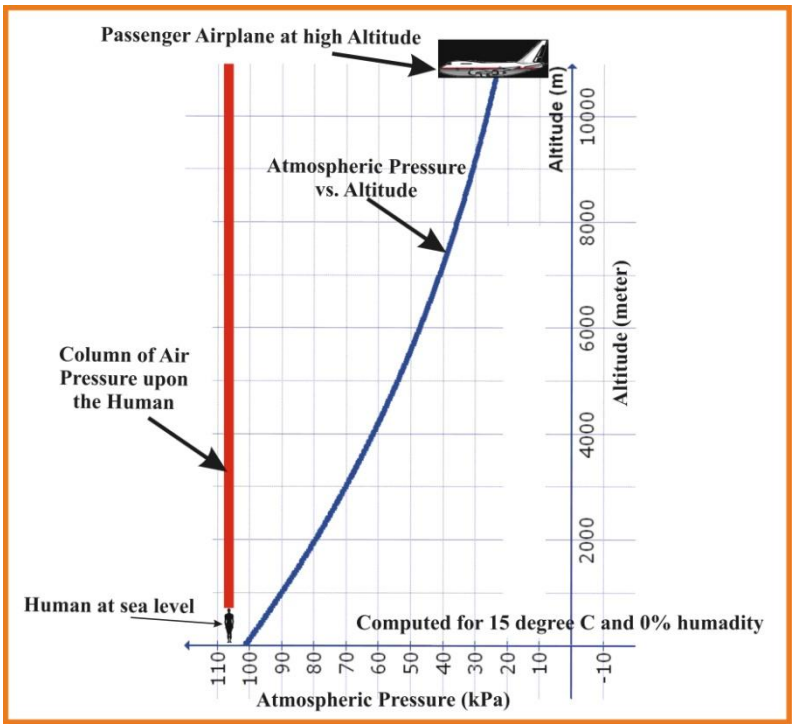

Fig.1. Graph of Atmospheric Pressure VS Altitude [19], where an airplane is inserted at 12,000 meters is surrounded by atmospheric pressure of around 30 kPa [19], to protect and give passengers comfort, the fuselage is pressurized to 101.325 kilopascals [20], but if a window is broken, passengers and objects near it will emerged with an equivalent of 0.5 ton *of force* [21], till the internal cabin stabilized, shown a person loaded with a beam of pressure.

The existence of atmosphere as layers of gases, represents a heavy weight on different objects on the surface of the planet, this weight is called, the atmospheric pressure, sometimes also called barometric pressure, is the pressure within the atmosphere of Earth (or that of another planet); in most circumstances atmospheric pressure is closely approximated by the hydrostatic pressure caused by the weight of air above the measurement point [14]. The atmospheric pressure is thought to be caused by the gravitational attraction of the planet on the atmospheric gases above the surface, and is a function of *the mass of the planet, the radius of the surface, and the amount of gas and its vertical distribution in the atmosphere*. [15, 16], the atmospheric pressure is modified by the planetary rotation and local effects such as wind velocity, density variations due to temperature and variations in composition [14]; the pressure varies smoothly from the Earth's surface to the top of the mesosphere, although the pressure changes with the weather, NASA has averaged the conditions for all parts of the earth year-round, from which its realized that, as altitude increases, atmospheric pressure decreases, one can calculate the atmospheric pressure at a given altitude [17], thus as elevation increases, there is less overlying atmospheric mass, so that atmospheric pressure decreases with increasing elevation [14]. In 1640, Evagelista Torricelli discovered that air has weight, when experimenting with measuring mercury, he discovered that air put pressure on the mercury [18], thus the average column of air with a cross-sectional area of 1 square centimeter (cm^2), measured from mean (average) sea level to the top of Earth's atmosphere, has a mass of about 1.03 kilogram, giving a pressure measures force per unit area, with SI units of Pascals (1 Pascal = 1 Newton per square meter, 1 N/m^2) [14].

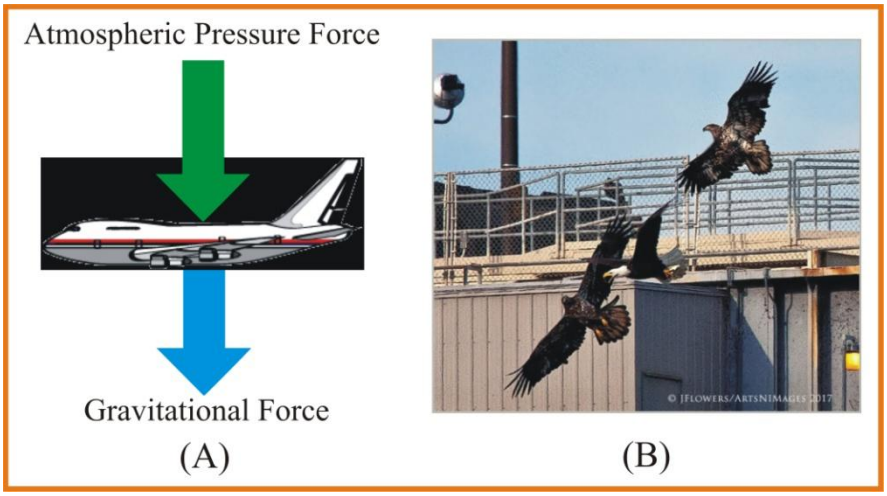

Fig. 2. If gravity exists, the airplane in (A) should encountered, gravitational force (F_G) from the earth and the Hydrostatic Force (F_H), from atmosphere, while (B) shows the high maneuverability of three eagles [22].

Fig. 1, shows the Graph of atmospheric pressure (in kPa) vs. altitude above sea level in meters, based on an equation from the CRC manual, a temperature of 15 deg. C and a relative humidity of 0% [19], a human is inserted on the surface, while an airplane is inserted at 12,000 meters (40,000 feet), its normal for a human to live on the surface of the planet, while subjected to a column of air extending 100 km to the boundary of the space, as shown by the red column extending from the human to the altitude where the airplane flying; the amount of pressure each individual is subjected to by this column of air depends on the surface area upon which it falls on, human beings and different other living species adopted to this weight and force, this is why it's very difficult for airplanes passengers to survive at an altitude above 3,000 m (10,000 feet) above sea level without pressurization of the cabin, to protect the crew and the passengers from the risk of a number of physiological problems caused by the low pressure outside the cabin, while air pressure above that altitude is very low, with low oxygen can cause Hypoxia, which reduces the alveolar oxygen tension in the lungs and subsequently in the brain, leading to sluggish thinking, dimmed vision, loss of consciousness, and ultimately death; altitude sickness includes Decompression sickness and Barotrauma; meanwhile the pressurization of the cargo hold is also required to prevent damage to pressure-sensitive goods that might leak, expand, burst or be crushed on re-pressurization [20], NASA specialist stated that, "*it would take about 100 seconds for pressure to equalized through a roughly 30.0 cm hole in the fuselage of a Boeing 747, anyone sitting next to the hole would have half a ton of force pulling them in the direction of the hole*" [21], as shown in Fig. 2-A, at 12,000 meters, an airplane is subjected to low Hydrostatic Force (F_H) pushing at the top, and Gravitational Force (F_G) pulling from bellow, while passenger are subjected to *half ton of force*, in this case gravity should have bigger role if it exist! the Hydrostatic Force (F_H), is minimum at that altitude and the *half ton force pulls directed towards the hole* [21],

it's relative to the external altitude, the difference is reduced while descending towards the ground, where we feel normality but the force is there, pushing us downwards; if such great force exists, then what effects it can cause on human, plants and materials existed on this earth? But as shown in Fig. 2-A, there is one of two forces influencing an airplane, the gravity and the atmospheric pressure, but which of them is really true?

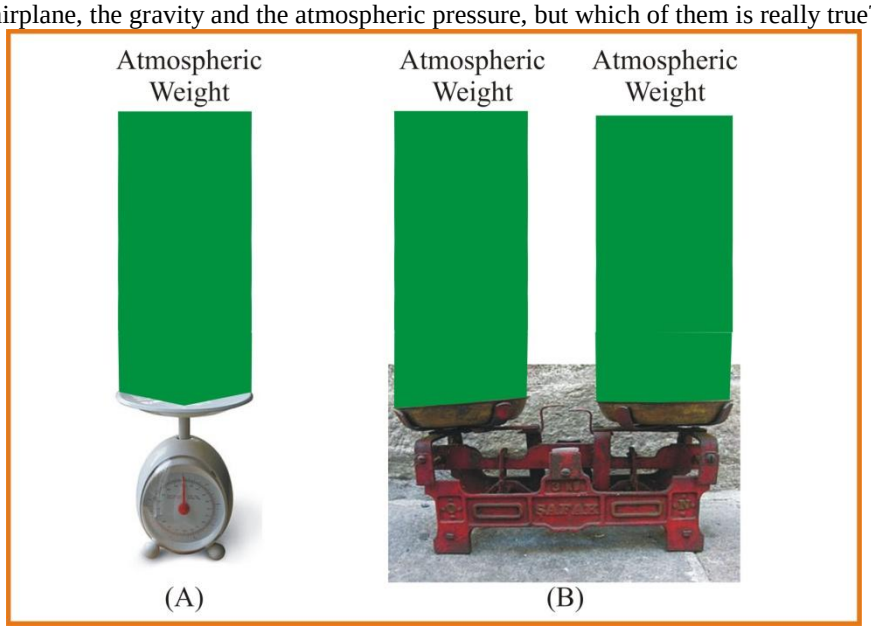

Fig. 3. The balance of weight: In (A) the weight of atmospheric column of air press the spring scale, calibrated to give zero reading, while in (B) the balance scale, balanced the two columns of air falling on both pans.

Fig. 3, shows two types of measuring scales, the spring and the balance, a column of air exerted atmospheric weight of 1.03 kilogram on each 1 square centimeter (cm^2) [14], on the pan of spring scale, which is calibrated to read zero, any measured items is added to that column, while the two columns impinging on the two scale a balance, creating the required stability of balance, any weight is compared with standard masses on the other pan; but since weight of an object is related to the amount of force acting on the object, either due to gravity or to a reaction force that holds it in place [23], then this weight is added to already existed weight of the atmospheric pressure, as in Fig. 3-B; hence the question raised by Fig. 3; what's causing the weight, gravity or atmospheric pressure? We never felt the gravity, while we can feel the existence of atmospheric pressure everywhere! Since pressure is the measures force per unit area [14], therefore this relation is logical than gravity, then why such an important factor which press and keep us in this comfortable environment never incorporated as force of stability, and been neglected and not been integrated with other forces, where it could form the factor behind the force maintaining stability on this planet?

Humans have managed to construct lighter than air vehicles that rise off the ground and fly, due to their buoyancy in air [24]; such as the airplane shown in Fig. 1, but what is the mechanism allowed it to reach that altitude? Which of the two forces shown in Fig. 2-A, it overcome, the Hydrostatic Force (F_H), or the gravitational force? Since flight is the process by which an object moves through an atmosphere (or beyond it) by generating aerodynamic lift associated with propulsive thrust, aerostatically using buoyancy, or by ballistic movement [24], and that flight depends on the density of an object relative to the air, if an object has a lower density than air, then it is buoyant and is able to float in the air without expending energy [24]. Aerostat is an example of such system that remains aloft primarily through the use of buoyancy to give an aircraft the same overall density as air; these include free balloons, airships, and moored balloons, an aerostat's main structural component is its envelope, a lightweight skin that encloses a volume of lifting gas to provide buoyancy, to which other components are attached [24]. Fig. 4-A shows the Main four forces relevant to flight, they are: Propulsive thrust, Lift created by the reaction to an airflow, Drag created by aerodynamic friction, Weight created by gravity and Buoyancy, for lighter than air flight, these forces must be balanced for stable flight to occur [25], similar to scales in Fig. 3, the atmospheric pressure impinging the upper area of the airplane shown in Fig.4-A, a factor not accounted for, and weight is regarded as due to gravity, but we know there is a column of air, extending 100 km in altitude, its impinging on each square centimeter of the airplane with 1.03 kg [14], so what cause the weight, is it gravity which we even don't know about its existence except its formula which was proven to be wrong? [9], thus we suggestion that, the force of weight the airplane encountered in Fig. 4-A is the atmospheric force, where weight is created by atmospheric pressure and Buoyancy, for lighter than air flight, also the dynamical and high maneuverability of eagles shown in Fig. 2-B

[22], and the way airplane lifts as shown in Fig. 4-B prove this, where the airplane wings are shaped to make air move faster over the top of the wing, when air moves faster, the pressure of the air decreases on these spots, so the pressure on the top of the wing is less than the pressure on the bottom of the wing, the difference in pressure created a force on the wing that lifts the wing up into the air, together with the load, as shown in Fig. 4-B [18], therefore, the aerodynamic lift, created by the motion of an aerodynamic object (wing) through the air, due to its shape and angle deflects the air [24], hence the deflection of air created low pressure on top and high pressure on bottom of the wing, which cause airplane to lift, therefore, *the lift is a trick made on the pressure of the air on the top frame*, as shown in Fig. 4-B, by causing imbalance of forces in the line along the wing, hence the wing become like a fulcrum while climbing, during the cruising at higher altitudes, airplane move across low air pressure, while when cruising at lower altitude, air pressure resistance is very high, with related to an increase in fuel consumption [26], where commercial airliners typically cruise between 10 km (33,000 ft) and 13 km (43,000 ft) where the thinner air improves fuel economy [10], and since weight as shown Fig. 3, is a load caused by the atmospheric pressure on an objects, thus for sustained straight and level flight, lift must be equal and opposite to weight (pressure) [24], hence it's how it counter the atmospheric pressure as suggested and shown in Fig. 4-B, this also explained the role played by pockets of high and low air pressure in destabilizing altitudes of airplanes.

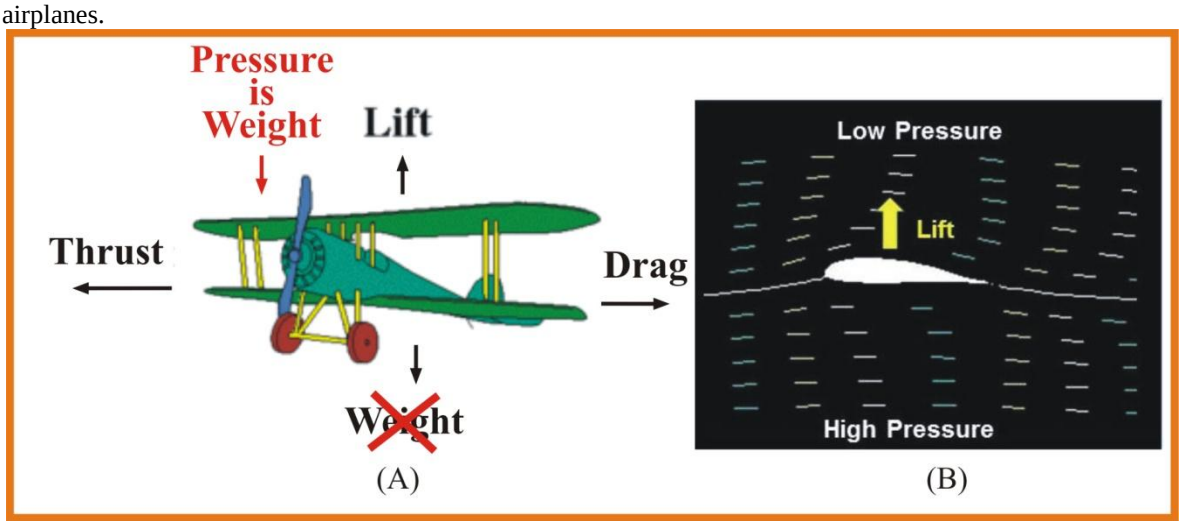

Fig. 4. (A) shows the four forces relevant to the flight, the thrust, Lift, Drag, and Weight [24] the weight is re-interpreted as caused by atmospheric pressure, pressing the airplane, the role of the force of lifting is to change the pressure force into buoyancy state; while in (B) a computer simulation showing how the dynamic of the wings cause the lift, where lower pressure is build above the wing, with related high pressure under the wing, resulting in the lift [18], this mechanism represents the transformation of the weight of the atmospheric force into buoyancy status .

III. The Hydrostatic Force (F_H)

William Stukeley, detailed the account of Newton's apple, anecdote to him by Newton, that "Why sh[oul]d that apple always descend perpendicularly to the ground," adding "Why sh[oul]d it not go sideways, or upwards? Assuredly the reason is, that the Earth draws it. There must be a drawing power in matter. And the sum of the drawing power in the matter of the Earth must be in the Earth's center, not in any side of the Earth." "Therefore does this apple fall perpendicularly or towards the center? If matter thus draws matter; it must be proportion of its quantity. Therefore the apple draws the Earth, as well as the Earth draws the apple." [27], that is how he derived the gravity, represented by the total mass of the earth, the *attractive gravitational force* [28], his apple is shown in Fig. 5-A, pull by gravitational force, given by

$$F_G = G\,\frac{m_1\,m_2}{r^2} \qquad (1)$$

Where, m_1 is the first mass (earth), m_2 the second mass (apple), r is the distance between the two masses, the gravitational constant $G = 6.67408 \times 10^{-11}$ $m^3.kg^{-1}$ ($N\text{-}m^2/kg^2$) [6]. If mass of an apple is 70 and 100gram, mass of earth is $5.97x10^{24}$, earth radius, r = 6,371,000 meters, results of these two apples are shown in Table. 1, but, as the gravitational constant G was found to have a formula, which when substituted in Eq. (1) it gives the following [9]

$$F_G = \left(\frac{r v_0^2}{m_1}\right)\left(\frac{m_1\, m_2}{r^2}\right) \qquad (2)$$

After, solving Eq. (2), the true nature of internal dynamic of the gravitational formula given by Eq. (1), emerged as

$$F_G = \frac{v_0^2\, m_2}{r} \qquad (3)$$

Therefore, the conclusion derived from Eq. (3), is that Eq. (1), is *the Centripetal Force (F_C),* formula, thus Newton's Gravitation Law is Wrong! [9], and the results for the two forces given in Table. 1, for the two apples are the *Centripetal Force (F_C),* for apples rotating at an imaginary orbit at the surface of the earth!

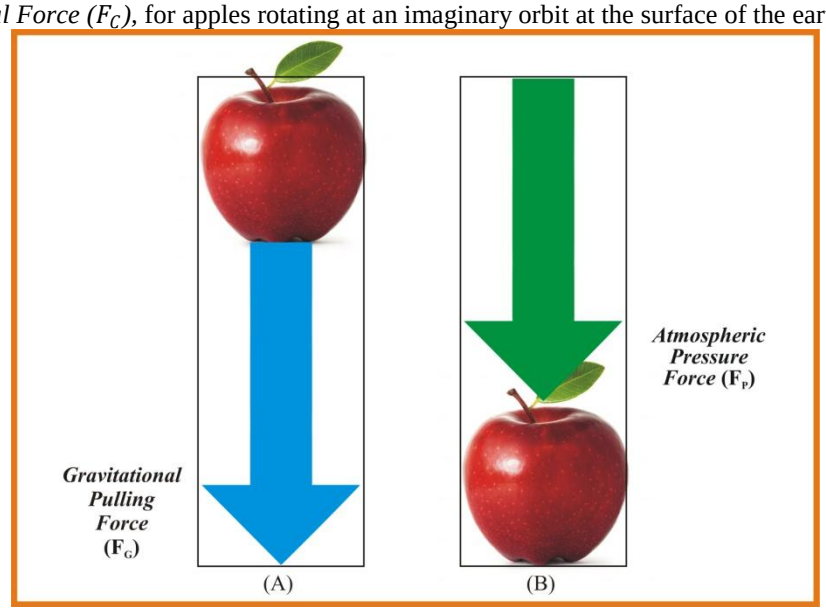

Fig. 5. Why and how an apple falls down? Does this because of the pulls by Newtonian's Gravitational Force (F_G) shown in (A), or due to the Hydrostatic Force (F_H) of Gravity, (or the Atmospheric Force of Pressure (F_P)), shown in (B)? You experience the pressure daily, but does anybody know what gravity is?

As we concluded that the Newton's Gravitation Law is Wrong! [9], the above questions asked by Newton that "Why should that apple always descend perpendicularly to the ground," and "Why should it not go sideways, or upwards?" [27], are not properly answered, the following is how we perceived what brought the apple downwards.

Fig. 5-B, shows an apple similar to Newton, but being subjected to the Hydrostatic Force (F_H) of Gravity, or the Atmospheric Force of Pressure (F_P), hence we asked, what cause the apple to fall from the tree? Is it gravity shown in Fig. 5-A, or it's what humans on this planet are daily subjected to shown in Fig. 1, or the resulted balance of the scale shown in Fig. 3-B that is the atmospheric pressure?

An apple on its tree, is continually been subjected to one force among the two forces shown in Fig.5, but what happened to an apple and how did it reached the state at which it becomes ready to fall from the tree? A study by the Michigan State University Extension showed that, as apples begin to ripen, they produce large amounts of ethylene, the ripening hormone. Ethylene stimulates softening of fruits and the formation of an abscission layer in the stem. Ethylene enhances the production of enzymes that break down the cell walls and the complex sugars that hold cell walls together in the abscission zone of the stem. As these glue-like substances break down, they leave the fruit connected only by the vascular strands, which are easily broken [29], since as mentioned, astronomical bodies retain an atmosphere when their escape velocity is significantly larger than the average molecular velocity of the gases present in the atmosphere [13], and since air is a physical substance which has weight, and constantly moving molecules, creating air pressure with a force that will lift kites and balloons up and down [18]; hence the apple shown in Fig. 5-B is continually subjected to atmospheric force of pressure, therefore a moment reached where the vascular strands connecting the apple can't withstand the atmospheric force of pressure which it's continually been subjected to, hence it falls downwards; and since a diver at 10.3 meters underwater experiences a pressure of about 2 atmospheres (1 atm of air plus 1 atm of water) [14], and unprotected diving in deep ocean can crash human body, therefore the force caused apple to fall, and that

keeps objects on the surface of planets is the Hydrostatic Force (F_H) of Gravity, or the Atmospheric Force of Pressure (F_P).

The Hydrostatic Force (F_H), is measured per unit area, with SI units of Pascals (1 pascal = 1 Newton per square meter, 1 N/m^2) [14], we can state this relation, as

$$P = \frac{F_H}{A} \qquad (4)$$

Where, F_H is the Hydrostatic Force in Newton, A is the area in m^2, and P is pressure in Pascals, therefore from this relation, the force is

$$F_H = PA \qquad (5)$$

Since, on average, a column of air with a cross-sectional area of 1 square centimeter (cm^2), measured from mean (average) sea level to the top of Earth's atmosphere, has a mass of about 1.03 kilogram [14], this can be express as

$$m = l \times A(1cm) = 1.03\ kg \qquad (6)$$

The air pressure at sea level is 1.013×10^5 N/m^2 (101 kilopascals, kPa) [14], hence the force is express as

$$F_H = (1.013 \times 10^5) \times A\ (m) \qquad (7)$$

If the force is known, the area due to such force is

$$A = \frac{F_H}{(1.013 \times 10^5)} \qquad (8)$$

Back to Fig. 5-B, the Hydrostatic Force (F_H), given by Eq. (7) exerted a force of atmospheric pressure on the apple, at the moment it started growing and taking the round shape of apple, but when the glue-like substances break down, leaving the fruit connected only by the vascular strands, which are easily broken **[**29], this is the stage when $F_H >$ than the vascular strands force connecting the apple to the tree, and since two apples taken with diameters of 7 and 8 cm (estimated as equivalent to 70 and 100 grams), thus the area been subjected to the hydrostatic force is half of the area of the sphere, with equivalent radius of 3.5 and 4 cm, thus the surface area A= 4πr^2/2, therefore the Hydrostatic Force (F_H), on apple is given by

$$F_H = (1.013 \times 10^5) \times (\frac{4\ \pi\ r^2}{2}) \qquad (9)$$

The result obtained in Table. 1, using Eq. (9), is so high in magnitude, which showed a missing proportionality between the force in pressure and orders of magnitude of known forces [30]; and since the origin in the atmosphere is the pressure rather than the force, and the multiplication of the pressure on the area resulted in this force, but the physical magnitude of the force in relation to pressure is not well explained, and since the weight of an average apple is 1 N [30], and order of magnitude of pressure [31] didn't related the falls of apple with pressure, hence Eq. (9) is modified to give the following formula

$$F_H = (1.013 \times 10^5) \times \left\{\frac{4\ \pi\ r^2}{2}\right\}^{2.5} \qquad (10)$$

Therefore, from Eq. (7) and Eq. (10), the general formula for the Hydrostatic Force (F_H) at sea level, is given by

$$F_H = (101{,}3) \times A\ (m) \qquad (11)$$

As altitude increase, the atmospheric pressure decreased, it's possible to calculate the atmospheric pressure at a given altitude [17], therefore, the general formula for the Hydrostatic Force (F_H), is given by

$$F_H = (P) \times A\ (m) \qquad (12)$$

Apple radius	Mass	Area	Force of Gravity	Hydrostatic Force F_{H-1} Eq. (9)	Hydrostatic Force F_{H-2} Eq. (10)
0.04 m	0.1	0.01005309649148733 836308045882649	0.9816361174517409 5035725987327653	1.01837867458766737618 00504791239x10^3	1.02650028171504267161 11391226029
0.035 m	0.07	0.00565486677646162 78292327580899	0.6871452822162186 6525008191129357	572.838004455562899101 27839450718	0.52650116683302985173 853806254902

Table. 1. Comparison between the gravitational force (F_G), and the Hydrostatic Force (F_H), for two apples, giving the weight of 70 and 100 grams, equivalent to diameter of 7 and 8 cm, and $G = 6.67408 \times 10^{-11}$ m^3.kg^{-1}, mass of earth is 5.97x10^{24}, radius of earth (r_E) = 6,371,000 meters, two results are derived for the Hydrostatic Force (F_H), where F_{H-1} using Eq. (9), while F_{H-2} is the correct answer using Eq. (10).

IV. Results and Discussion

- Based on the finding that, Newton's Gravitational Force (F_G), was discovered to represent a slightly distorted form of the Centripetal Force (F_C), and doesn't related theoretically or physically to the perceived Newton's Gravitation Law [9].
- And that, the Centripetal Force (F_C) derived from the gravitational formula and given by Eq. (3), thus the calculated force on Newton's apple, is just a Centripetal Force (F_C) derived to orbit at the radius of the earth.
- Such force given by Eq. (1) is not the gravitational force imagined by Newton and taken as guaranteed with confidence by scientists during the past centuries.
- Therefore, as there is a need for an alternative mechanism to explain why the apple fall.
- The atmosphere of the earth is an important factor that makes the earth environment suitable for life contrary to other planets in the solar system.
- The atmosphere composed from several layers of gases extended for 100 km and it imposed an atmospheric pressure, representing the Hydrostatic Force (F_H) of Gravity, or the Atmospheric Force of Pressure (F_P) on each area or of any object on the surface or at any level in the environment of the earth, the force is strongest at sea level, and decreased with altitudes [10].
- The direction of Hydrostatic Force (F_H), or the Atmospheric Force of Pressure (F_P) at any object is directly towards the center of the earth.
- Although Evagelista Torricelli discovered that air has weight in 1640, after conducting experiments of the pressure with mercury [18], and he was contemporary with Newton who published his book in 1686 [7], but Newton gravity couldn't allow relation between atmospheric pressure and the fall of apple.
- It's was thought that, an airship flies because the upward force, from air displacement, is equal to or greater than the force of gravity [32], but in reality when the upward force, from air displacement, is equal to or greater than the force of the Hydrostatic Force (F_H), or the Atmospheric Force of Pressure (F_P), the airship flies.
- Pressurized an airplane, means bringing the 100 km column of air shown in Fig. 1, back to passengers inside the airplane, means to normalized conditions for passengers at low pressure environment, although the altitude only 100 km, but conditions are governed by the pressure we have been adopted while growing.
- If the force of gravity exists, it should be equal to or greater to counter the force of pressurization at only 100 km altitude, instead it tends to eject a person from the airplane.
- The Hydrostatic Force (F_H), is given by the transformation of the well known formula, $P_A = \frac{F_H}{A}$.
- Using this formula to derive the Hydrostatic Force (F_H), or the Atmospheric Force of Pressure (F_P), the apple is being subjected to this force at the upper half of its sphere, where it interacted with the force.
- The magnitude of the Hydrostatic Force (F_H) is found to be greater by 1,000, thus proportionality between the force in pressure and magnitude of other forces [30], is done and a force with magnitude of 1.026500281715042671611139122602 9 N is derived for an apple with 8 cm diameter.
- The magnitude of Hydrostatic Forcee (F_H), causing apple to fall down is derived for the above two cases are given in Table. 1.
- As a suggestion, the magnitude of the Hydrostatic Force F_H), needs to be reviewed, and more experimental works can determine the validity of the hypothesis.
- From the Hydrostatic Force (F_H) of Gravity, forces at Sea levels are stronger than at high altitudes.
- From the above point, apples and fruits planted at farms at Sea levels are easily falls than those planted at higher altitudes.

V. Conclusion

The atmospheric pressure is an important structure in our planet Earth, although other planets contained atmosphere but earth is suitable for life as we know it, the atmosphere pressure had created an environment which make life comfortable on the earth, it also has a pressure and Hydrostatic Force (F_H) of Gravity, or the Atmospheric Force of Pressure (F_P), been subjected on any object on the surface of the planet, the direction of

the force is directed towards the center of the earth. The air dynamic created by wing of an aircraft created low pressure at upper and high pressure at the bottom allowed heavier than air to flow, because the operation countered the Hydrostatic Force (F_H), thus it's the force in the atmospheric pressure not gravity which cause Newton apple to fall down, a formula is derived with the Hydrostatic Force (F_H), and an example of the force on apple.

Acknowledgment

Great people dedicated their talent and energy for the benefit of humanity; two great institutions which I greatly benefit from their services are ResearchGate and wikipedia.org, to them I express gratitude and above all to Almighty God.

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