THE CORONA VIRUS MAY HAVE COME FROM SPACE

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With a new corona virus making the headlines and causing personal distress to many and extending its realm of havoc into the financial and business world the truest cause of this and other similar pandemics needs to be honestly explored.

The main facts relating to the onset and spread of this pandemic can be summarised as follows:

• On October 11 2019 a meteoritic bolide (probably fragment of a comet) explodes in a brief flash in Nth East China. We think it probable that this bolide contained embedded within it a monoculture of infective nCoV-2019 virus particles that survived in the interior of the incandescent meteor seen in Fig 1. From the broad range of arguments we shall develop later on in the article we consider the seemingly outrageous possibility (no doubt outrageous to many readers) that literally hundreds of trillions of infective viral particles were then released embedded in the form of fine carbonaceous dust from the flash-exploded bolide.

Figure 1

• In late November to early December 2019 first human cases nCoV-2019 appear in the Wuhan region and environs (by all accounts unrelated to Wuhan meat and seafood market).

• Isolates of virus now studied in many laboratories show very low or no mutation indicating that the incoming virus is essentially a “monoculture”. This is dramatically different to the picture one gets if the main spread of the virus was through affected victims replicating the virus and spreading copies which inevitably would show mutations over a broad sample of isolates. Everyone in the Wuhan region would have been exposed to essentially the same virus (including many animals , such as mammals, snakes and even perhaps vegetation)

• Unsubstantiated claims that people pass on the virus to others without, or before, they show any symptoms implies a very strange pattern of epidemiological behaviour forcing

difficulties with the straight forward infective model of human-to-human transmission. On the other hand the meteorite hypothesis is consistent with a wide regional "environmental" contamination which may include clothes, hair, cars, side-walks, trees, grassland, surface water pools and water reservoirs.

• From a crude look at the evidence it is amply clear that human-to -human transmission might have occurred yet it is low or difficult or confined to intimate family contacts. In the latter instance the contact transfer model is somewhat confused by the fact these intimate social units may have shared or sampled the same infected space.

• A very wide area in China is "suspect" and this area is now quarantined – an operation that would probably have been done rationally based on Chinese government sampling for nCoV-2019 RNA sequences.

The strong localisation within China is the most remarkable aspect of the disease, the first cases of which probably began to show up from November 2019 onward. The fatalities reported so far appears to be confined to individuals, particularly the elderly, with underlying health problems, and the death toll so far is said to be less than the thousands who have died in the US in the past 3 months from seasonal influenza. Links of this outbreak to a Wuhan wild life market have been highlighted, but detailed studies conducted thus far have not seriously strengthened the case. It appears that a range of wild animals including bats and snakes had become host species for a very similar corona virus but a causal connection again does not hold up to rational scrutiny. (Our full scientific analysis of the data with our colleagues is in our letter submitted to *The Lancet*. The text can be found at viXra.org site viXra:2002.0039 at http://viXra.org/abs/2002.0039?ref=11076818)

Readers would need to be reminded that a fireball of the kind shown in Fig. 1 is a meteoroid probably many tens of metres across. Although larger fragments meteorites would fall to the ground almost at once, micron-sized dust released in the troposphere above China would take several weeks to drift to the ground. If these particles became the nuclei of rain drops the transfer to ground level as rain and mist could be protracted and last many weeks.

Such a line of thinking might sound bizarre to the uninitiated reader, but not so to anyone who has elected to take an objective view of the rapidly accumulating body of evidence to support the theory that life (all living forms on Earth) have an external origin – the theory known by the name "Panspermia".

Panspermia – an idea originally discussed by the pre-Socratic Geek philosopher Anaxoragas in the 5th century BC - challenges the idea that life originated *de novo* on the Earth. This theory refutes the idea of Spontaneous Generation as first enunciated by Aristotle in the 3rd century BC, and revived in the 20th century in the form of the *primordial soup theory*. Despite over 50 years of experiments in numerous laboratories there is no evidence to support this theory, and a large body of scientific evidence from biology, geology and astronomy actually contradicts it main tenets. The support for the alternative view that life is a cosmic phenomenon stems mainly from the fact that the information content of life at a genetic and molecular level is super-astronomical; and this needs at least an astronomical or cosmological setting. Thus, the idea is that life's information, now locked largely in the form

of bacteria and viruses, are everywhere in space being carried mainly in comets. Comets have radioactive heat sources in the interiors and serve as both distributors and amplifiers of cosmic life – bacteria and viruses. The panorama of life on Earth is the result of the assembly of such bacterial and viral genes that has come to be assembled like pieces of a gigantic jig-saw puzzle over some 4.2 billion years.

Whenever a planet on which cosmic life has become established is struck by asteroid and comet impacts some of this life is of course destroyed – as happened for instance 65 million years ago with the extinction of the dinosaurs on Earth. But a small and significant fraction of the resident life on the planet is actually blasted off into space and would survive space travel to seed a nearby habitable planet.

It is only relatively recently that scientists have been able to fully grasp the enormous magnitude of the microbial and viral content of the terrestrial biosphere. We now know that a typical litre of surface seawater contains at least 10 billion microbes as well as some 100 billion viruses—the vast majority of which remain unidentified and uncharacterized to date (https://www.the-scientist.com/features/an-ocean-of-viruses-39112?archived_content=9BmGYHLCH6vLGNdd9YzYFAqV8S3Xw3L5). Two years ago an international group of scientists collected bacteria and viruses that fell through the rarefied atmosphere near the 4000 metre peaks of the Sierra Nevada mountains of Spain. They arrived at an astonishing tally of some 800 million viruses per square metre per day and an associated slightly smaller tally of bacteria - all of which would of course ultimately fall to the Earth's surface (eg. Reported in https://www.nytimes.com/2018/04/13/science/virosphere-evolution.html). The assumption normally made is that all such viruses and bacteria necessarily originate on the Earth's surface and are swept upwards in air currents; but in such a model many difficulties associated with the upward transport process are ignored. In our view, a significant fraction of this vast number of falling microbes must originate outside the terrestrial biosphere and come from cometary sources – viruses and bacteria that are actually expelled from comets.

Further supportive evidence for this point of view has come from sampling the stratosphere for its bacterial content. From a sampling of the stratosphere at a height of 41 km, using balloon borne equipment which was carried out in 2001, we already arrived at an estimated input from this height of 20-200 million bacteria per square metre per day, and 10 to 100 times more viruses, falling downwards to the Earth.

If we take into account all the facts available to date we cannot avoid the conclusion that vast numbers of bacteria and viruses continue to fall through the Earth's atmosphere, and it seems inevitable that a significant fraction is of external origin. We are also beginning to get hard evidence pointing to the first signs of bacterial life being lodged in rocks that formed 4.2-4.3 billion years ago when the Earth was being relentlessly bombarded by comets. The strong indications are that comets carried the first bacteria to our planet at this time, and moreover that the entire subsequent evolution of life on Earth took place against the backdrop of comets regularly introducing new genes.

Comets have been regarded with awe and trepidation in many ancient cultures of the world. Almost without exception they have been regarded as bad omens – bringers of

pestilence and death. The evidence for comets being implicated in the origin of life on Earth was intensely controversial when these ideas were first discussed by one of us and the late Sir Fred Hoyle. Now there is a growing consensus that this is inevitable in some form. In this article we argue that even today the periodic influx of cometary dust and debris could be responsible for waves of epidemic disease – such as the recent corona virus - that sweep our planet from time to time.

As a life-bearing comets makes its repeated orbits around the sun its volatile substances are progressively vaporised and eventually we end up with what could be recognised as large carbonaceous meteorites. The number of close perihelion passages that a comet can survive before becoming completely stripped of volatiles is probably a few hundred. Carbonaceous chondrites could represent materials from comets denuded of volatiles but retaining a residue of silicates and more refractory organic structures. From time to time such objects find ingress into the Earth.

Organic structures identifiable with bacteria and viruses have been reported in carbonaceous meteorites over several decades, including studies by Hans D. Pflug in the 1980, and Richard Hoover in more recent times. Fig. 2 shows carbonaceous structures in the Murchison meteorite identified with fossilised microbiota.

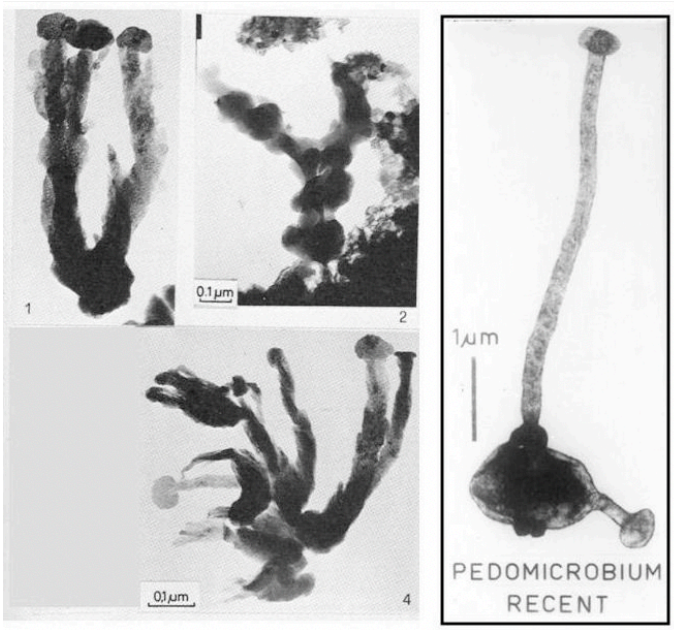

Fig. 2a. Microfossils in the Murchison meteorite (left) discovered by H.D.Pflug (1984).

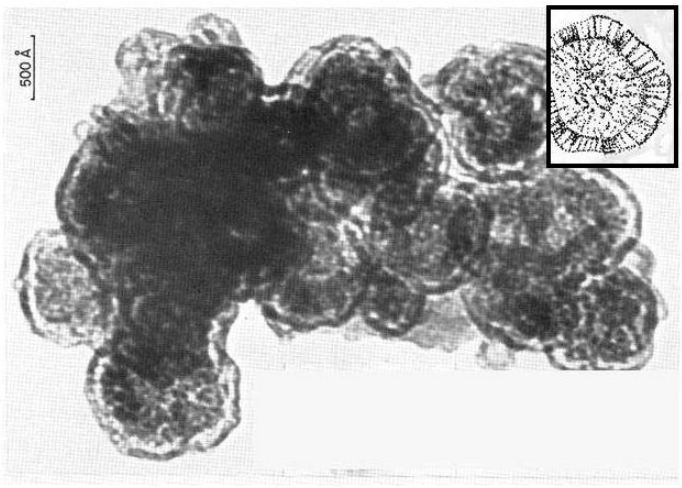

Fig.2b Electron micrograph of organic structure within the Murchison meteorite compared with the structure of an influenza virus

In 2013 a fall of carbonaceous stones in Sri Lanka also revealed distinctly biological structures as shown in Fig.3. However, because this latter fall occurred over a remote part of the island and no video record was available, this event has not yet been registered as official meteorite fall.

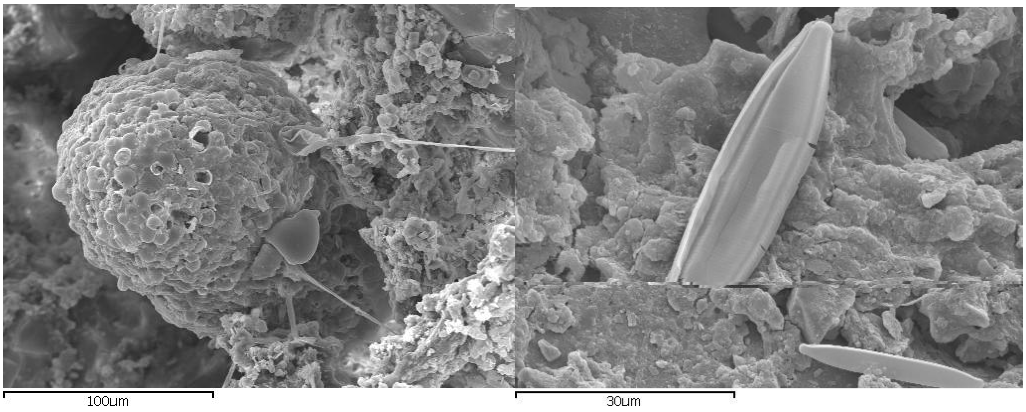

Fig.3 Extinct acritarch fossil (L) and diatom frustule (R) from Polonnaruwa meteorite]

If, as we have argued in this article, a cometary impact or impacts led to the commencement of life on the Earth 4.2 billion years ago, it is reasonable assume that subsequent arrivals of cometary material would also carry biological material that would affect the progress and evolution of terrestrial biology. The evidence for this is very clear. Indeed, extra-terrestrial microbiological invasions never stopped and must inevitably continue even to the present day. Such invasions could take the form of new viral and bacterial infections that strike our planet at irregular intervals, drifting down onto the surface in the form of clumps of meteoritic material.

Reports of the sudden spread of plagues and pestilences punctuate human history throughout the millennia. The various epidemics, scattered through history and throughout the world often bear little or no resemblance one to another. However, they share a common property of afflicting entire cities, countries or even widely separated parts of the

Earth in a matter of days or weeks. The Greek Historian Thucydides describes the plague of Athens of 429BC thus:

"It is said to have begun in that part of Ethiopia above Egypt….On the city of Athens it fell suddenly, and first attacked the men in Piraeus; so that it was even reported by them that the Peloponnesians had thrown poison into the cisterns….."

This event from Classical Greece bears striking similarities to the modern events in China. Thucydides writes that many families were simultaneously struck by a disease with a combination of symptoms hitherto unknown. The idea of an enemy (the Peloponnesians) poisoning the drinking water rings similar to what has happened in the Corona virus outbreak in China.

Fig.4. Medieval depiction of a comets, death and disease

Very similar descriptions of a sudden onset and rapid global spread is relevant to almost all earlier as well as later epidemics. Extreme swiftness of transmission is hard to comprehend if, as is usually supposed, infection can pass only slowly from person to person or be carried by vectors such as lice and ticks, and more recently, monkeys, bats or snakes. Such explanations are particularly untenable for the many epidemics that occurred before the advent of air travel when movement of people across the Earth was a slow and tedious process.

The general belief, that is by no means well-proven, is that major pandemics, such as influenza, start by random mutation or genetic recombination of a virus or bacterium which then spreads across a susceptible population by direct person-to-person contact. If this is so, it is somewhat surprising that major pandemics tend to be relatively short-lived, usually lasting about a year, and that they do not eventually affect the entire human population, which would not have a specific immunity of any totally new pathogen. We might argue that a primary cometary dust infection is potentially the most lethal, and that secondary person-to-person transmissions have progressively reduced virulence resulting in a diminishing incidence of the disease over a limited period.

As we have already mentioned primary infections of a human population could occur directly by contact with "infected" meteoritic dust from an exploding cometary bolide, or indirectly by the original cometary infection passing first to rats, lice, primates, bats, snakes which can act as intermediaries.

One important piece of historic evidence that emerged 101 years ago relates to the great Influenza pandemic of 1918-1919 that caused some 20-30 million deaths worldwide. Reviewing all the available data Dr. L. Weinstein wrote as follows:

"Although person-to-person spread occurred in local areas, the disease appeared on the same day in widely separated parts of the world on the one hand, but on the other, took days to weeks to spread relatively short distances. It was detected in Boston and Bombay on the same day, but took three weeks before it reached New York City, despite the fact that there was considerable travel between the two cities. It was present for the first time at Joliet in the State of Illinois four weeks after it was first detected in Chicago, the distance between those areas being only 38 miles……" L. Weinstein, *New Eng.J.Med, May 1976*

The lethal second wave of the influenza pandemic of 1918 thus showing up on the same day in Boston and Bombay defies the realities of human travel at the time. Before the advent of air travel so it was impossible for people to transfer the virus from Boston to Bombay or vice versa. As Sherlock Holmes would have said: "The case is clear as daylight, my dear Watson: a new virus (or genetic trigger for a circulating virus) clearly fell through the skies simultaneously in locations that were separated by tens of thousands of kilometres." Over the following 12 months the infective agent probably became dispersed through the troposphere and came down with an expected seasonal modulation across much of the world.

The abrupt appearance in the literature of references to particular diseases is also significant to recall in that they probably indicate specific invasions of new pathogens. Thus the first clear description of a disease resembling influenza was probably recorded in the 17th century AD, while the earliest reference to the common cold in the literature was about the 15th century AD. Also, it is significant that many historic plagues such as the Plague of Athens (described in meticulous detail by Thucydides) have not been linked to easily recognisable modern counterparts.

The factors governing the actual pattern of global incidence for any particular extra-terrestrial invasion could be complex. If bacteria or viruses are dispersed in a diffuse cloud of small particles, the incidence of disease may well be global. On the other hand, a smaller disintegrating aggregate of infective grain clumps falling over a limited area of the Earth's surface could provide a geographically more localised outbreak of disease. This may have been the case for the Plague of Athens in 429BCE and the Chinese Corona Virus outbreak of 2019/2020 CE. Systematic effects such as air currents over the Earth's surface could also be relevant in controlling the transport and dispersal of infective particles. In particular certain latitude belts might well be more favoured than others for either the accumulation and/or the settling of these particles, or indeed for their avoidance.

Our suggestion in regard to the ongoing Corona virus outbreak, if correct, would have profound biological, medical and sociological implications. The Corona virus appears, fortunately to have a low mortality rate – indeed a possibly lower mortality rate than for pandemic influenza. With the enormous number of biological particles that are known to enter Earth's biosphere on a continuing basis, a diligent microbiological vigil of the

stratosphere may well be prudent - indeed necessary - if we are to avoid the risk of a future pandemic of some hitherto unknown lethal disease.

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