

THE WONDEFULL WORLD OF SEEDS.

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We always take seeds for granted without giving a thought to all the planning that has gone into its future or its conception; but before we start we have to accept that considerable planning has gone into this even before the seed is produced; example you wouldn't build a motor car if you did not have an engine or a road; Now the complexities of producing a seed is full of snags let alone the viability of its future so lets make a list;

1. How do we move our off spring to new ground? we have to make travel arrangements and we have plenty of options; do we encase in some succulent fruit for animals to take away and deposit in a heap of dung; sounds good 2 for the price of one; Do we put wings on it to fly away in the wind; wind is cheap and the tree or plant has already used this principle seems to work. Do we put little hooks on it and wait for an animal to brush by and trot away with it? Or a sticky residue to stick to the side of a birds beak and he brushes it off some where else; Or have the plants studied Physics and Engineering like the Mediterranean squirting cucumber; as it ripens; fills with a slimy juice. Eventually; the pressure within becomes so great that the cucumber bursts of its stalk and shoots through the air for as far as 6metres. Behind it; streaming from hole in its base like gases flaring behind a space rocket; comes a trail of slime and with it ;seeds, Now another plant does it in a slightly different manner; the broom plant powers its explosions in the opposite manner. Its launching energy comes from not the increase of liquid but from evaporation; as the pod warms on a summers day; the side facing the sun dries faster than that in the shade; this in turn sets up a tension in the pod which causes it to split suddenly into 2 halves; catapulting its tiny black seeds in all directions as it does so; which raises another question about the entire Legume family; as their seeds of beans ; peas are all mechanically harvested or by hand over thousands of years; man has sort of solved that problem and have no idea what little tricks they had to effectively distribute their seeds in all probability, Birds who would have spread them far and wide.

So we have seeds that have parachutes [common dandelion] a 6inch gliding seed of alsomitra which is about the weight of a pea; when it glides then hits an obstacle it releases the seed; the cyclad coconut they travel by sea and the seed has everything it wants for a long voyage; and many others use the medium of water to travel; good example in NZ is the Kowhai; this little yellow seed has an impermeable hard covering and seeds that are carried in streams have their skins slowly etched by tumbling stones and when cast ashore

germinate quite readily as the endocarp becomes etched it allows moisture in to set the process off So we have many options especially from animals; plants recruit animals as carriers in several ways; by bribery; deceit; self sacrifice and straightforward coercion; some with evil intent such as the grapple plant in Africa; a low growing creeper; relies on the seeds being trodden on; its capsules have arms ending in hooks that are so sharp; so strong and point in many directions that when the foot of an elephant or rhino descends on one; the hooks fasten into the sole and the capsule stays there; step after step; until the arm wears so thin that it breaks and the capsule with its seeds breaks away; so empathy is absent in the plants job sheet. But there must surely be some nice plants and some that grow in the fynbos; the heartland in Africa; they provide their seeds with an oily; edible covering called an eliasome. Ants find this particularly attractive. They collect such seeds and carry them down to their underground nests where they take their payment for their transport service by gnawing off the eliasomes; the seeds themselves ; full of nutrient though they are; are of no interest to the ants and are abandoned ; the seeds are now in an ideal situation and can germinate; safely out of sight and reach of potential consumers; if left above the ground within a few hours ;99% of them would be eaten in their entirety by mice and other rodents; if now run the time slide rule over this go back to time when such rodents did not exist it just confirms that some thought that we don't fully understand ;the plant comes up with plan :B" take this to a stage further not to confuse ;most fruits in early development are either acid and so sour that the flesh tastes very unpleasant; but when ripe they become delectably sweet; even aromatic; colourful which are all signals to one and all the seeds are ready for transport; come and get it.so my pet theme; rewards all around but no free lunch; animals need sustenance their role is very simple compared to the plant which has so many complex activities; such as growing from seed; to dealing with environmental issues; planning for future generations; so many things; but back to where I started this preamble about the evolution of all this; it shows us clearly that plants had to mutate for 2 reasons; the invasion of animals and advancement of insects and birds but they must have realised as they were static and everything around them was moving they could create a situation of turning disadvantage into not only advantage but a whole raft of opportunities of spreading their off spring far and wide as up to the cretaceous period it had been fairly laborious and principally had wind to distribute pollen and asexual layering and water distribution;[cyclads] and if we flip this around and talk about the giant sloths that weighed 3 tons and giant armadillos the size of small trucks did present a problem to the plants but they came up with seeds with extremely hard shells that these beasts could not destroy but they could

consume them in a vicious feeding frenzy and deposit them in a great chunk of manure another one I find a bit odd is fig seed distribution, it is observed that bats are fond of figs [so are we'] when the skin of the figs turn yellow it is a colour that they see clearly at night but after gorging on the figs they would head back into the caves which is hardly the place to drop any seed but have given this a bit of thought and come to the conclusion; bats being mammals there gut process would be much the same as mammals that don't consume there food over a long period; rather hit and run back to cover and the time lapse could; emphasize the word could be about 18 to 20 hours between consumption and passing out the rear end could possibly mean a lot of their excrement with the seeds drop on the outside because the tree is smart enough to optimize the distribution and if didn't work they certainly wouldn't pursue with it; No Free Lunch after all birds were here before bats and they are more bomb proof when it comes to delicate soft seeds as what they consume is usually passed through their system in 20 minutes but somewhere in the process the bats must play a role but not an obvious one like in the American deserts where bats at night stop and land on the clear patch of the cacti and drink nectar from the bright red flowers whilst doing this they carry pollen from flower to flower then head north about 6 months later they arrive back and consume the fruit and assuming what I have stated above a slow digestive cycle; they head south and conveniently drop the seeds miles from the parent cacti; Perfect win win for both parties and whilst this arrangement works well it does mean animals all rely on this system but if the worst scenario happened and all the animals disappeared; the plants would survive as they would revert back to their ancestral roots and start again without all that is vital to us but not to them plus there is still my favourite subject mycelium which does play an important role as keeper of the books sort of speak with stored DNA which plays a major role in the governance of all plant life and if things turned pear shaped mycelium and bacteria would not only be the keeper of the books but the saviour of the books and the history of all plant life; Why because it has been there since the inception of life we are starting to slowly understand same and when we clear the clouds of obsolete religious beliefs and open our eyes we will all become much wiser and with that we will take care of all organisms with more care and understanding; stop concentrating on issues of emissions as they are a consequence that come and go and if scientists at present could come up with some accurate figures on the volcano at present erupting for about may be 6 months the amount of emissions of co2 released think you would get a shock and this is only one volcano; so what if the temperature rises a couple of degrees in the next 59 years and the sea rises 500mm; this has happened hundreds of times and it has righted itself ironically

by its self; what is a certainty that the plant life will survive and ensures our survival; What has been unfolding the last few years is really bordering on mass hysteria and failed politicians rushing around telling us doom and gloom on the horizon ;As far as I am concerned the planet is not bad place to reside; and will be quite happy to placed back in the earth to assist the recycling process; contrary to some who believe I don't give much away so that should put the record straight for now anyway and just remember who the real masters are on this planet; plants don't step on them; just take the time to think about them and the 600 million years they have been thinking and planning that and that alone permits our very existence.

Now we have dealt with the first process of the manufacture and distribution of our seeds lets trundle onto the next stage the new creation of life, germination has to take place and this is also complex in its self; some seeds need light to activate which correlates to increase of light in the spring time which is possibly a trigger point; some seeds need to take up to 25% of their weight in water before the germination commences and of course some seeds need either mycelium or chewing micro organisiums to breakdown the endo corp to allow moisture in. Temperature plays role but it can be fickle on certain tree seeds especially some conifer seeds and some of the prunus family; temperatures over 15 deg the seed shuts down but for most seeds warmth and moisture does the trick; in tropical areas seeds that drop onto the ground can start the process virtually immediately which is understandable; seeds just sitting on the ground would be fair game to all and sundry. Birds do play a role of gathering seeds and burying them in different places for future food but they seldom remember where all of them are buried but many who have been buried germinate; not sure who is working for who; hazel nuts fall into the same category; ones taken away by rodents, squirrels and tucked away and buried in leaves etc and sometimes forgotten but in an unique way does allows seeds of more chance of proliferation; this does digress slightly from the germination side of things but does in some way create situations of proliferation. Now seeds in deserts can sit for very long periods but it only takes one good rainfall and all hell lets loose underground for 2 reasons; not only are there millions of seeds but millions of corms and bulbs just waiting for the same thing; water; add constant warmth; light and bingo everything happens at astonishing rate and after about 3 weeks it's all over; plants wither; carbohydrates are recalled to nourish corms and bulbs; seeds fall the ground; wind buries seeds; dryness preserves them until the next good rainfall; As deserts are fairly constant; plants here don't have a season as most annuals and perennials but one that solely relies on the precursor of rain; many desert seeds coat their skins with a chemical inhibitor; so until a shower of rain

washes it away; there will be no germination, In areas where rains are sporadic; plants have another special trick up their stalk; they have the ability to shed only a small amount of seeds and have a wee insurance by storing a % of seeds in their foliage where rain cannot reach until much later when the plant disintegrates altogether the shrinking of same still protects the seeds some times for years; that by the way is not an accident; it is a very clever back up plan to ensure the continuation of the species. The collection of seeds on earth is only done on a very limited scale but the truth is many such as our animals and other organisms are disappearing not by evolution but the loss of thousands of plants that we all depend on; the system is intricately inter locked; one depends on the other for one reason or another and I strongly suggest for a start we investigate with the aid of science all the natural medicinal properties of plants that can benefit mankind instead of the insane pathway we are going down with man made chemical drugs after all if it works for plants in nature; why not us ?Sorry forgot about the wealthy drug companies they are the ones that sow the seeds of doubt.