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25 November and 1 December 2020 (last updated 27 December 2020)

Plant Galls and Evolution (III):

The origin of plant galls according to several "Fathers" of basic scientific branches: From Hippocrates (460-370 BC[1]) to Linné (1707-1778 AD) and Mendel (1822 – 1884 AD) to Darwin (1809-1882 AD). Also, abstracts and links to some present scientific authors (2020 AD[i]).

A Historical Sketch

Red-pea gall of gall wasp *Cynips divisa* (agamous generation) on oak leaf.
In the autumn the galls turn brownish. The hole in the gall (second from above) indicates that the gall wasp has already left its home. Others leave it in springtime. Photo W.-E. L. (18 November 2020)

[1] https://en.wikipedia.org/wiki/Anno_Domini (Note: **All the internet links in the present article have been set between 14 October and 31 November 2020**.)
For [i] see endnote p. 21. – Later addition (12/25/2020): Yet, the notes on Mendel and the corresponding links were inserted on 25 December of 2020.

Also galls of gall wasp *Cynips divisa* on oak leaves (*Quercus petraea*).
Photo W.-E. L. (18 November 2020)

Contents

Gall *of Cynips divisa* as on the preceding pages (but now gall opened). In the midst/center above the larva is shown. Photo W.-E. L. (18 November 2020)

Abstract

(a) Under the subtitle *Plant Galls and Evolution in Antiquity*, the basic origin-ideas of

(1) Hippocrates of Kos, the "Father of Medicine" (460-370 BC) and
(2) Theophrastus of Eresos (371-286 BC), the "Father of Botany"

are briefly discussed. In contrast to several other Greek philosophers (from Thales to Empedocles to Epikur), both appear to have been fully convinced of an intelligent origin of life and the constancy of different life forms.

Also, some footnotes have been presented on Pliny the Elder (23-79 AD), and Dioscorides (ca. 40-90 AD) with further literature references.

Concerning some descriptions of plant galls in non-western antiquity: In a link to the almost forgotten work of Konrad Böhner (1933): *Geschichte der Cecidologie* (2 volumes with altogether 1178 pp.[2]), I have presented the text of the introductory chapter by Felix von Oefele (Original title: EINLEITUNG. *Vorgeschichte zur Cecidologie der klassischen Schriftsteller*. Pp. 1-64[3]), so that anyone interested in that topic may have access to it. (Apart from some doubtful comments on "Urmenschen", the connections between classical Greece[4] and Babylonia[5] were especially interesting for me.[6])

(b) Under the subtitle *Plant Galls and Evolution in Modern History*

3) Marcello Malpighi (1628 – 1694 AD), the "Father of Cecidology" and
4) Carolus Linnaeus (1707 – 1778 AD), the "Father of Modern Taxonomy"
5) Gregor Mendel (1822 – 1884 AD), the "Father of Modern Genetics"

are cited who also believed in the intelligent origin of life and the constancy of the different life forms yet now in accord with the Genesis record – Linnaeus citing frequently from different Bible books *within* his scientific treatises: "O JEHOVA! Quam magnifica sunt Tua Opera! Vir insipiens non cognoscit ea & stultus non animadvertit ea. *David*." (How great your works are, O Jehovah! …No unreasoning man can know them; And no foolish person can understand this. *David*.") Linnaeus was fully convinced: Life was created by Jehovah.

Mendel was confident and also directly stated that the laws of heredity he had discovered substantiated Carl Friedrich von Gärtner's conclusion (1848) 'that species are fixed with limits beyond which they cannot change'

6) In contrast, Charles Darwin (1809 – 1882 AD) the "Father of Natural Selection"

believed that his theory of natural selection explained the origin of all life forms. He stated among other things: "I would give absolutely nothing for the theory of natural selection, if it require miraculous additions at any one stage

[2] The dubious/questionable/controversial but isolated comment in Böhner's note of thanks ("Danksagung") to the sponsers and financiers on p. XIII of the first volume of his work as a "wahrhaft deutsche Tat [gesperrt] in der Geschichte der Wiedergeburt des neuen Reiches" should, in my opinion, not distract from the historic and scientific values of the "rest" (1178 pp.) of the two volumes.
[3] http://www.weloennig.de/Oefele.pdf
[4] https://en.wikipedia.org/wiki/Classical_Greece
[5] https://en.wikipedia.org/wiki/Babylonia
[6] Also mentioned here: "Later Babylonian medicine resembles early Greek medicine in many ways. In particular, the early treatises of the Hippocratic Corpus show the influence of late Babylonian medicine in terms of both content and form."
https://en.wikipedia.org/wiki/Babylonia with reference to "M. J. Geller (2004). H. F. J. Horstmanshoff; Marten Stol; Cornelis Tilburg (eds.). West Meets East: Early Greek and Babylonian Diagnosis. Magic and rationality in ancient Near Eastern and Graeco-Roman medicine. 27. Brill Publishers. pp. 11–186. ISBN 978-90-04-13666-3. PMID 17152166."
See also: https://brill.com/view/book/edcoll/9789047414315/BP000004.xml

of descent." Also: "According to my opinion, (which I give everyone leave to hoot at ...) classification consists in grouping beings according to their actual relationship, i.e., their consanguinity, or descent from common stocks."

He was largely wrong in accord with the falsification criteria he himself had formulated for his theory. This has been discussed extensively in part I **http://www.weloennig.de/PlantGalls.pdf** and part II **http://www.weloennig.de/PlantGalls.xyz.pdf** of *Plant Galls and Evolution*.

Concerning plant galls, **Joachim Illies** (a former Director at the Max-Planck-Institute for Limnology, Plön, Außenstelle Schlitz, Professor at the Universities of Gießen and Kiel; acclaimed critic of neo-Darwinism) noted that "For the plant, the entire effort involved in gall formation is of no apparent benefit, it is more of a harm because it requires nutrients, reduces the assimilating leaf area and disrupts the normal course of growth, sometimes even the most valuable parts of the plants: buds and seeds. Consequently, according to Darwin, the plants without galls should have an advantage over those with galls, and so in the course of evolution the gall-free variants among the plants should have been chosen very soon and everywhere as the fittest ones [which obviously is not the case]".

Finally, the abstracts of the first two parts on *Plant Galls and Evolution* are reiterated including references to several contemporary authors.

Preface

Mel T. Cook, author of *The Insect Galls of Indiana*[7], at his time professor at Rutgers University, New Jersey[8], complained (1911, p. 386) that "it is very doubtful if any phase of biology has been neglected more than that very conspicuous and extremely puzzling branch known as cecidology"[9], the study of plant galls. And now (as also noted in *Plant Galls and Evolution* (II)), almost 110 years later in **2020**, Marion O. Harris (University of North Dakota) and Andrea Pitzschke (University of Salzburg) have rightly deplored (2020, p. 1854) that "Galls have not received the attention they deserve. They are often seen as quaint oddities rather than as indicators of interesting happenings in the world of plants and their biotic interactions"[10].

This appears to be, indeed, an astounding paradox in botanical research (to a certain extent perhaps even of modern science in general) considering the fact that ***plant galls constitute an unusually widespread, in fact, globally ubiquitous and distinctly visible, multiform and often even brightly coloured phenomenon***, which anyone can come across and investigate to a certain extent even without any or much scientific equipment.

Just to repeat some numbers on the occurrence of plant galls (*cf*. Lönnig 2020): For insect gallers alone – i.e. gall inducing bacteria, fungi, viruses, nematodes and mites not yet included – according to the best "Estimates of the global richness of gall-inducing insects ranged from 21,000 to 211,000 species, with an average of 132,930 species" and 13% and 45% of the total number of about 422,000 seed plant species are involved (Espirito-Santo and Fernandes 2007, pp. 95 and 96). Although 98% of them are flowering plants, galls also occur on ferns and lycopods. Santos et al. (2019, p. 53) found them in 20 fern families and one lycophyte family (altogether 93 host species belonging to 41 genera).

[7] https://www.amazon.de/Insect-Galls-Indiana-PP-801-871/dp/B0178BFP30
[8] https://science.sciencemag.org/content/53/1359/39
[9] https://www.jstor.org/stable/2467079?seq=1#metadata_info_tab_contents
[10] https://nph.onlinelibrary.wiley.com/doi/epdf/10.1111/nph.16340

However, molecular and further studies of the last few years appear to have generated ***some light at the end of the tunnel of neglected plant gall research***. In two rather extensive review papers (Lönnig 2017: *Plant Galls and Evolution* (I) *How More than Twelve Thousand Ugly Facts are Slaying a Beautiful Hypothesis: Darwinism* (63 pp.)[11] and 2020: *Plant Galls and Evolution* (II)*: Natural Selection, DNA, and Intelligent Design Or: The proof that complex structures of thousands of species have been formed for the exclusive good of other species thus annihilating*[12] *Darwin's theory* (55 pp.)[13] – as shown in the footnotes both directly available at the internet – I have included, apart from the morphology and anatomy of some galls, also an overview on the most recent papers on molecular plant gall research. To avoid extensive repetitions, I would like to refer the reader interested in the details to these two reports.

In the present contribution I would like to restrict myself to important facettes of the historical site of plant gall research with the main emphasis on the origin and evolution of these phenomena from the point of views of several of the "Fathers" – as they approvingly have been called by their adherents and successors[14] – of their respective scientific branches as: Hippocrates of Kos (460-370 BC), the "Father of Modern Medicine" (Yapijakis 2009, p. 507)[15] and Theophrastus of Eresos (371-286 BC), often called the "Father of Botany", to Marcello Malpighi (1628 – 1694 AD), "known affectionately as the 'Father of Cecidology'" (James A. Wearn 2011, p. 481)[16], Carolus Linnaeus (1707 – 1778 AD), the "Father of Modern Taxonomy" to Gregor Mendel (1822 – 1884 AD), the "Father of Modern Genetics" and especially Charles Darwin (1809 – 1882), often called (not quite correctly) the "Father of Evolution"[17] or the "Father of the theory of evolution"[18] – perhaps somewhat better (if one likes to use this term again) – the "Father of the Theory of Natural Selection"[19], up to some present neo-Darwinian authors and their critics (in the *Abstracts* of my two former papers of 2017 and 2020).

Lest the reader expects a full coverage of the topic (which would necessitate a book of its own), I would like to emphasize that this is just a historical sketch and an introductory article to the topic. As common in historical papers, the reader will find some original quotations mostly from the primary literature in the following text.

A Brief Introduction

> What are commonly known as galls are vegetable excrescences, and, according to the definition of Lacaze-Duthiers, comprise "all abnormal vegetable productions developed on plants by the action of animals, more particularly by insects, whatever may be their form, bulk or situation." (Francis Henry Butler in the Encyclopaedia Britannica, 11th ed. 1911).
>
> Gall, an abnormal, localized outgrowth or swelling of plant tissue caused by infection from bacteria, fungi, viruses, and nematodes or irritation by insects and mites. (Present online edition of Encyclopaedia Britannica; retrieved 19 October 2020).
>
> Insect galls are highly specialized plant organs formed by an intimate biochemical interaction between the plant and a gall-inducing insect. Galls provide the insect enhanced nutrition and protection against natural enemies and environmental stresses (Body et al. 2019)

Galls, *cecidia* (plural form of *cecidium*: derived from the Greek κηκίς, genitive κηκῖδος, the gall nut of Plinius the Elder) must have been noted by even cursory plant observers for thousands of years all around the globe ('nearly everyone has seen an insect gall' – Porter Felt 1940) – most probably first noting them without recognizing the intimate connection with the respective causative agents, especially insects. However, on opening a gall, the more careful observer must also have seen at least a kind of "worm" developing in it.

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[11] http://www.weloennig.de/PlantGalls.pdf
[12] Darwin's choice of words
[13] http://www.weloennig.de/PlantGalls.xyz.pdf
[14] However, in a much more comprehensive perspective – as far as positive and true results of research and actions are involved – *cf*. James 1:17 (**πᾶσα δόσις ἀγαθὴ** καὶ πᾶν δώρημα τέλειον ἄνωθέν ἐστιν, καταβαῖνον ἀπὸ τοῦ **πατρὸς τῶν φώτων**)
(https://www.jw.org/en/library/bible/kingdom-interlinear-greek-translation/books/james/1/ and further linguistic details
https://biblehub.com/interlinear/james/1-17.htm)
[15] https://pubmed.ncbi.nlm.nih.gov/19567383/
[16] https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1095-8339.2011.01173.x (Book Review)
[17] Google please: "Darwin the father of evolution": Some 183,000 results (13 November 2020)
[18] Google please: "Darwin the father of the theory evolution": 35,100 results (13 November 2020)
[19] Google also: "Darwin the father of the theory of natural selection": 25,300 results (same date as above). Cunningham & Saigo (1990:563): Environmental Science: A Global Concern (Brown, Chicago) is also often cited for this term. However, natural selection was also known before Darwin.

Plant Galls and Evolution in Antiquity

The Beginnings of Plant Gall Research:

First, a short glance at the *presence* of gall records in western antiquity.

The earliest written records of western science mentioning plant galls are by (to partially repeat):

(a) Hippocrates of Kos (460-370 BC), "universally recognized as the father of modern medicine" (Yapijakis 2009, p. 507)[20] referring to the Aleppo gall's use in medicine,

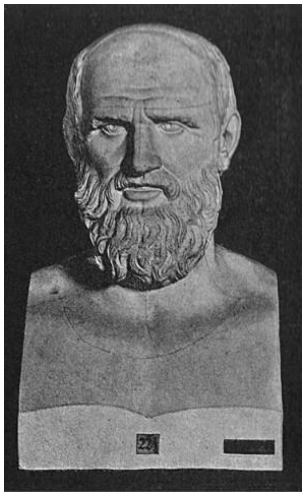
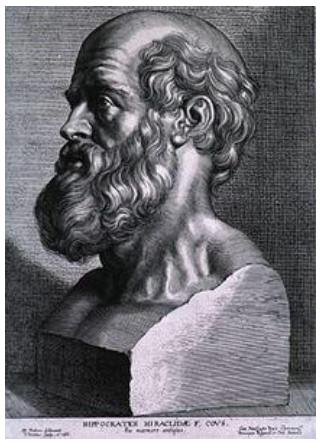
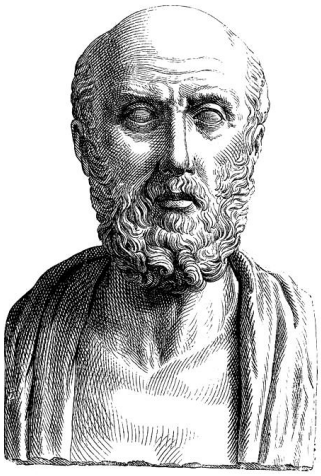
(b) Theophrastus of Eresos (371-286 BC) who "alluded to the superior quality of the gall nuts of Syria" (Swanton 1912, p. 1)[21] and who – already 2,300 years ago – was carefully discerning ten different gall types, mostly on oak trees (see the detailed account in Redfern 2011, position 9291 to 9384 in the Kindle edition).

(c) Pliny the Elder (23-79 AD), as well as

(d) Dioscorides (ca. 40-90 AD), both mostly referring to the Aleppo gall.

Hippocrates of Kos, the "Father of Medicine"

Also known as Hippocrates Asclepiades – on the meaning of his name dictionaries usually state that it is the latinized form of the Greek name Ἱπποκράτης (Hippokrates) meaning "horse power", composed of the elements ἵππος (hippos) meaning "horse" and κράτος (kratos) meaning "power" and the meaning of Asclepiades is "descendant of (the doctor-god) Asclepios".

Figures from left to right: https://de.wikipedia.org/wiki/Hippokrates_von_Kos#/media/Datei:Hippokrates.jpg https://da.wikipedia.org/wiki/Hippokrates https://en.wikipedia.org/wiki/Hippocrates (see, however, also https://www.newyorker.com/magazine/2018/10/29/the-myth-of-whiteness-in-classical-sculpture)

About 2,400 years ago, Hippocrates recommended plant galls for medical purposes about a dozen times usually in combination with other plants and more (like honey, cyclamen, bitter almonds, bull bile etc.).[22]

Although in innumerable treatises Hippocrates is credited with the separation of medicine from the superstitions not least of the often phantastic religious ideas of his time (in contrast to such notions he was "*believing and arguing that disease was not a punishment inflicted by the*

[20] https://pubmed.ncbi.nlm.nih.gov/19567383/ (as above)
[21] Swanton, E.W. (1912) British Plant-Galls. A Classified Textbook of Cecidology. Methuen & Co. LTD, London. https://archive.org/details/b28128096/page/n7/mode/2up
[22] Check please: https://core.ac.uk/download/pdf/29410529.pdf

gods but rather the product of environmental factors, diet, and living habits. Indeed, there is not a single mention of a mystical illness in the entirety of the Hippocratic Corpus"[23]), the Hippocratic Oath, translated by Francis Adams starts as follows[24]:

> "I swear by Apollo the physician, and Aesculapius, and Health, and All-heal, and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation…"

"I swear by Apollo the Physician":

> "Apollo is one of the Olympian deities in classical Greek and Roman religion and Greek and Roman mythology. The national divinity of the Greeks, Apollo has been recognized as a god of archery, music and dance, truth and prophecy, healing and diseases, the Sun and light, poetry, and more. … Medicine and healing are associated with Apollo, whether through the god himself or mediated through his son Asclepius.[25]

"and Aesculapius":

> "Asclepius (/æsˈkliːpiəs/; Greek: Ἀσκληπιός Asklēpiós [asklɛːpiós]; Latin: Aesculapius) or Hepius is a hero and god of medicine in ancient Greek religion and mythology. ... Asclepius represents the healing aspect of the medical arts;"[26]

"and all the gods and goddesses":

Well, I'm not going to delve here into the mythological ancient Greek pantheon. Suffice it to state for our topic *plant galls and evolution* that neither the Greek creator gods like Erebos, Piitís-Thæós, Demiourgós[27], nor the goddesses Thesis or Eurynome were generally described as evolutionists deriving one plant or animal form from another distinctly different one.

This appears to be applicable also to the world view of Hippocrates: Nobody – as far as I'm aware – will assert that Plato (427 BC-347 BC)[28] who may have met his contemporary Hippocrates (460-370 BC) and who was commenting on ***Hippocrates' holism***[29], was a forerunner of Darwin (*cf*. the sheer endless polemics of Ernst Mayr against Plato's "typological thinking"[30]). Incidentally Plato refers twice to Hippocrates (1) in *Protagoras* as "Hippocrates of Kos, the Asclepiad"[31], and (2) in *Phaedrus* similarly as "Hippocrates the Asclepiad"[32]. Plato emphasized the unchangeability of the world (see below).

Thus, according to the "Father of Medicine" the answer to the question *plant galls and evolution* most probably implies unchangeable creation/constancy of the plant gall phenomenon.

Margaret Redfern comments (2011) on the first references and records on plant galls:

> "The earliest use of galls was as herbal medicines. The first records are from the Classical Greeks: Hippocrates in the fifth to fourth centuries BC and Theophrastus in the third century BC. **By 'gall', they and most subsequent references to galls until recent times meant the Aleppo gall or gall-nut, caused by *Andricus infectorius***[33]. The identity of the Aleppo gall has been confused throughout history, probably because of its use and importation all over Europe and further east in Asia for making medicines, dyes and inks and for tanning leather (see below). Until recently, the scientific name generally used was ***A. gallaetinctoriae*** or ***A. tinctoriusnostris***, but these probably refer to mixtures of similar species used in trade, including the marble gall ***A. kollari***. So, these names should not be used (Stone et al., in press).
> …. *Throughout the whole period from Hippocrates* ***to the end of the eighteenth century***, ***the only galls known were caused by insects*** (*and eriophyoid mites mistaken for insect larvae*). Although it was known that fungi caused diseases of plants and sometimes distorted them and caused swellings, these were not known as galls."[34]

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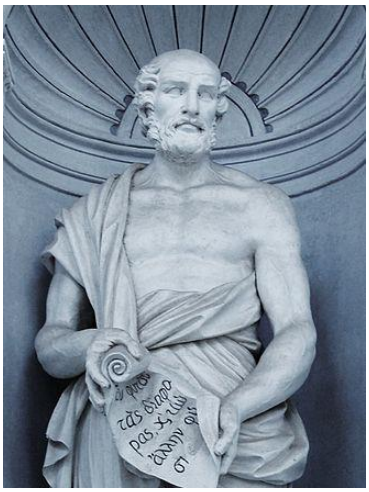
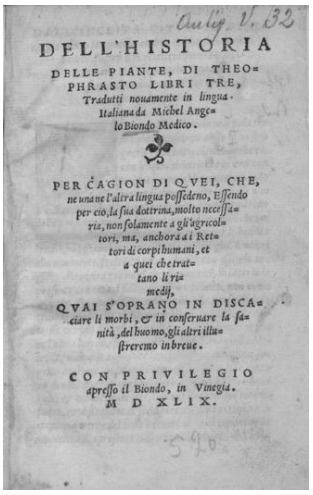
[23] https://en.wikipedia.org/wiki/Hippocrates (retrieved 27 October 2020).
[24] http://classics.mit.edu/Hippocrates/hippooath.html
[25] More at https://en.wikipedia.org/wiki/Apollo
[26] https://en.wikipedia.org/wiki/Asclepius
[27] https://www.hellenicgods.org/creator-god---demiourgos
[28] https://en.wikipedia.org/wiki/Plato
[29] Plato's Socrates asks Phaedrus: "And do you think that you can know the nature of the soul intelligently without knowing the nature of the whole? Phaedrus answers: ***Hippocrates the Asclepiad says that the nature even of the body can only be understood as a whole***". Apart from some earlier Hebrew influences, one may see here the first hints to holism in western medicine in particular and biology in general. As for the Bible's usage of the term "soul" in contrast to Plato, see please https://wol.jw.org/en/wol/d/r1/lp-e/1200004192. *Cf.* also Lutheran theologian Anders Nygren in Suppl. below.
[30] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6001556/
[31] http://classics.mit.edu/Plato/protagoras.html
[32] http://classics.mit.edu/Plato/phaedrus.html
[33] *Andricus infectorius* – see the gall to which Hippocrates usually referred to for his medical treatments at https://cpie.kollect.fr/observatoire/index.php?module=fiche&action=fiche&d=hymeno&id=236465
[34] M. Redfern (2011): PLANT GALLS (Position 8564 and 9678 of the Kindle Edition of HarperCollins e-books)

Theophrastus of Eresos (371-286 BC), the "Father of Botany"




DELL'HISTORIA
DELLE PIANTE, DI THEOPHRASTO LIBRI TRE, Tradutti nouamente in lingua Italiana da Michel Angelo Biondo Medico.
PER CAGION DI QVEI, CHE, ne vnane l'altra lingua possideno, Essendo per cio, la sua dottrina, molto necessaria, non solamente a gli'agricoltori, ma, anchora a i Rettori di corpi humani, et a quei che trattano li ritmedij,
QVAI S'OPRANO IN DISCACciare li morbi, & in conseruare la sanità, del huomo, gli altri illustreremo in breue.
CON PRIVILEGIO
apresso il Biondo, in Vinegia.
M D XLIX.

Figures from left to right from: https://de.wikipedia.org/wiki/Theophrastos_von_Eresos https://en.wikipedia.org/wiki/Theophrastus https://de.wikipedia.org/wiki/Theophrastos_von_Eresos Photo of plant gall by W.-E. L.

Since Pliny the Elder[35 & 36] and Dioscorides[37] relied strongly on Theophrastus' descriptions of plant galls for their use in medicine and other practical appliances, we are going to focus our attention here on Theophrastus of Eresos, the "Father of Botany".

As mentioned above, Theophrastus of Eresos "alluded to the superior quality of the gall nuts of Syria" (Swanton 1911, p. 1) and was – already 2,300 years ago – carefully discerning about ten different gall types, mostly on oak trees (see the detailed account in Redfern 2011, position 9291 to 9384 in the Kindle edition)'. Böhner gives 46 different page references for Theophrastus in his 2 volumes (1933, 1178 pp.) on the history of cecidology.

Theophrastus (originally studying in Plato's school and after Plato's death working closely together with Aristotle) is often considered to be 'the father of botany' due to his (for his time) comprehensive and thorough two excellent treatises *Enquiry into Plants* (originally ten books of which nine survived)[38] and *On the Causes of Plants* (six of the eight books survived). Theophrastus appears to have followed to a certain extent Aristotle's teleology although qualifying it in several points.

In his *Metapysics*, Theophrastus states that 'Divine is the principle of all, by virtue of which things both are and endure' and Drozdek comments that according to Theophrastus 'The permanent of the world as a whole exists as much as it is infused by God' (Drozdek 2016, pp. 199, 201)[39]. – There are no evolutionary hypotheses by the father of scientific botany ***who had mentioned***

[35] "Cajus Plinius Secundus der Ältere … hat seine Angaben über Gallen fast ausschließlich dem Theophrastos entnommen, auf welchen wir uns daher vollständig beziehen können…" (Konrad Böhner (1933, p. 102): Geschichte der Cecidologie. Vol. 1. Mit einer Vorgeschichte zur Cecidologie der klassischen Schriftsteller von Felix von Öfele. Verlag Nemayer, Mittenwald. Es gibt jedoch auch Unterschiede. More on Plinius by Böhner vol. I with 18 and vol. II with 21 page references.

M. Redfern (2011) comments in her book PLANT GALLS (Position 9410 of the Kindle Edition of HarperCollins e-books): "Pliny was familiar with 'gall-nuts', i.e. the Aleppo galls of commerce [caused by *Andricus infectorius*, Fig. 250], which were widely used for dyeing and the tanning of leather and for ink-making. He thought they grew as rapidly as fungi:

Pliny affirms, That the Galls break out altogether in one Night, about the beginning of June, and arrive to their full Growth in one Day…

(From John Evelyn in Sylva, 1644, quoted by Swanton, 1912.) He assumed that the gall-nut was the fruit of the oak, produced in alternate years to acorns; it developed in a day and shrivelled up immediately if struck by heat (Cosens, 1916***). His source was clearly Theophrastus' description of the Aleppo gall*** (see Box 14.1). Like the Greek naturalists, Pliny had noticed holes in the galls and had seen 'culices' (gnats) in watery pustules in oak leaves (perhaps the currant galls of *Neuroterus quercusbaccarum*, Fig. 150a, Chapter 9) but he did not connect the insects with the formation of the gall. He also did not think of the galls on different trees as being similar structures; 'galls' were the familiar Aleppo galls, and growths on other plants were different. Pliny also recognised the bedeguar on rose (*Diplolepis rosae*, Fig. 141e, Chapter 9) and the gall of Mikiola fagi on beech (Fig. 81e, Chapter 9). ***Most of Pliny's knowledge of the use of galls in healing and in commerce was based on the writings of Aristotle and Theophrastus, and would also have been due to his contemporary Dioscorides***, a Greek surgeon who was physician to the Roman army at the time of the emperors Nero and Claudius."

[36] Seems to have believed ín a kind of pantheism: https://www.encyclopedia.com/people/literature-and-arts/classical-literature-biographies/pliny-elder ("For Pliny, "Natura is the world, both as a whole and as its separate components; she is both the creator and the creation" (Beagon, 2005, p. 26)".

[37] Redfern: "In De Materia Medica, Dioscorides described the properties of 600 medicinal plants, including oak galls, and also included animal products of dietary and medicinal value. This work was to be the leading pharmacological text for the next 16 centuries." See also Böhner with 35 page references (both volumes).

[38] https://ryanfb.github.io/loebolus-data/L070.pdf pp. 199-203, 207, 209: "The oak however bears more things besides its fruit than any other tree;" – followed by descriptions of galls. See also: https://archive.org/stream/enquiryintoplant00theo/enquiryintoplant00theo_djvu.txt

[39] Drozdek A (2016) *Greek Philosophers as Theologians: The Divine Arche*. New York: Routledge.

455 plant species in his treatises[40]. Rather, his world view may perhaps remind us more of Plato's "unchangeable pattern[s]":

Kallímakhos[41] comments (2010): "In the dialogue Tímaios, Plátôn speaks extensively of a creator. He puts these words, not in the mouth of Sôkrátis (Socrates, Σωκράτης), but in that of the Pythagorean, Tímaios of Lokrós (Timaeus of Locri, Τίμαιος ὁ Λοκρός)."

> "… I am asking a question which has to be asked at the beginning of an enquiry about anything---was the world, I say, always in existence and without beginning? or created, and had it a beginning? ***Created, I reply***, being visible and tangible and having a body, and therefore sensible; and all sensible things are apprehended by opinion and sense and ***are in a process of creation and created***. Now that which is created must, as we affirm, of necessity be created by a cause. But the father and maker of all this universe is past finding out; and even if we found him, to tell of him to all men would be impossible[42]. And there is still a question to be asked about him: Which of the patterns had the artificer in view when he made the world---the pattern of the unchangeable, or of that which is created? ***If the world be indeed fair and the artificer good, it is manifest that he must have looked to that which is eternal***; but if what cannot be said without blasphemy is true, then to the created pattern. Everyone will see that he must have looked to, the eternal; for the world is the fairest of creations and he is the best of causes. And having been created in this way, the world has been framed in the likeness of that which is apprehended by reason and mind ***and is unchangeable***, and must therefore of necessity, if this is admitted, be a copy of something."[43]

Kallímakhos continuous:

> "From the above passage, we can assume that ***Tímaios is speaking of an archetypal form when the text uses the term unchangeable pattern*** (εἶδος) as primordial. He says that the world must of necessity be a "copy of something." The universe was created, and that which is created must have a cause, which he calls "father and maker of all this universe," but that the father is inscrutable. Whether the Tímaios believes this creator to have consciousness is not clear."[44]

As far as I could find out: no evolution (in the sense perhaps of the authors mentioned in the next paragraph) in the world view of Theophrastus of Eresos (371-286 BC), the "Father of Botany".

Unfortunately, there seem to be no references to plant galls – those so strongly conspicuous but largely neglected natural phenomena – by Greek philosophers like Thales, Anaximander, Anaximenes, Empedocles ('survival of the fittest'), Epikur, or the Roman Lukrez – all of whom formulated some evolutionary ideas, although in a prescientific form (see, for the details, David Sedley (2007): Creationism and its Critics in Antiquity. University of California Press, Berkeley). It would certainly not be a great risk to assume that all these philosophers understood the phenomena of plant galls more or less in agreement with Thales "everything flows" (***πάντα ῥεῖ***; panta rhei).

Absence or only some descriptions of plant galls in non-western antiquity

And now just a glimpse on the missing *absence* of plant gall observations in non-western antiquity.

It may also be called deplorable that, taking a prime example, we have no detailed records of the time when some 3,000 years ago (to cite 1 Kings 4:29, 33, 34) "God gave Solomon wisdom" so that he "***would speak about the trees, from the cedar in Lebanon to the hyssop that grows on the wall; he would speak about …the birds [or 'flying creatures']*** ... People from all the nations came to hear Solomon's wisdom, including kings"[45], most probably mentioning at least some of the more striking gall formations on trees and herbs (see Figure 1 above). As for the topic of evolution, judging from the three Bible books usually assigned to Solomon, intelligent creation

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[40] https://biotech.law.lsu.edu/books/osler/modern_medicine.htm

[41] Could be a pseudonym. He says in https://www.hellenicgods.org/projectstatement "I am known as Kallímakhos, a religious name meaning "he who fights the beautiful battle," a name I hope to do honor to. I am a man of 69 years and no-one special. I am not a priest or a saint, but am simply someone who through tremendous good fortune and study has gained access to knowledge about the ancient religion, and I am simply trying to share what I have learned."

[42] See in contrast to Plato's view the apostle Paul's great speech at Acts 17: 22-31 (especially verses 26-28): "And he made out of one man every nation of men to dwell on the entire surface of the earth, and he decreed the appointed times and the set limits of where men would dwell, ***so that they would seek God, if they might grope for him and really find him, although, in fact, he is not far off from each one of us***. For by him we have life and move and exist, even as some of your own poets have said, 'For we are also his children.'"

[43] https://www.ellopos.net/elpenor/greek-texts/ancient-greece/plato-creator.asp

[44] https://www.hellenicgods.org/creator-god---demiourgos (as for the comment "Whether the Tímaios believes this creator to have consciousness is not clear", I would like to point out that this is in clear contrast to the Creator according to virtually all the Hebrew and Greek Bible books; see for example 1Ch 28:9 ("…Jehovah searches through all hearts, and he discerns every inclination of the thoughts"), as well as 2Ch 16:9, Job 31:4 and 34:21, Ps 11:4-7, Ps 130: 3-4, **Ps 139: 3-12**, Pr 5:21 and 15:3, Jer 16:17 and 32:19, Heb 4:13, 1 Pe 3:12, 1 Jo 3.22. See on that point also Max Planck about God and his world order: "We have to put up with the fact that a being infinitely superior to us in wisdom, who can see through every fold in our brain and every movement of our heart, would recognize our thoughts and actions as causally conditioned. But there is no degradation of our legitimate self-esteem in this" (see context in http://www.weloennig.de/MaxPlanck.html as well as several further Nobel laureates at http://www.weloennig.de/Nobelpreistraeger.pdf (e.g. C. B. Anfinsen: "We must admit that there exists an incomprehensible power or force with limitless foresight and knowledge that started the whole universe going in the first place."

[45] https://www.jw.org/en/library/bible/study-bible/books/1-kings/4/ According King James Version 1611: "And he spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall".

would have been his basic idea also for the origin of plant galls and their insects. However, so far, there have not been found any written records of the necessary details to prove this hypothesis[46].

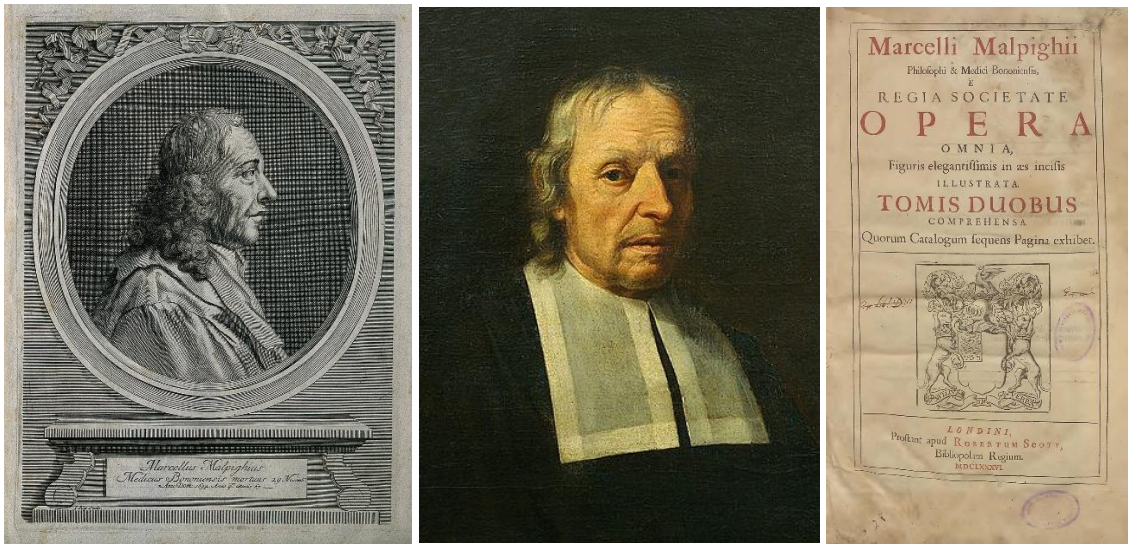
Nevertheless, in his *Prehistory to the Cecidology of the Classical Writers*, Felix von Oefele (1933, pp. 1-64) gives some overview on plant galls and their usage in ancient Egypt, Syria, Arabia, Mesopotamia (Sumer, Assyria, Babylon, including references to notes on cuneiform texts on clay tablets) and China etc. – unfortunately, so far I could not detect a more recent and more thorough discussion of galls in non-western antiquity.[47]

Further historical studies of this largely neglected subject may reveal captivating information about ancient plant gall knowledge like, perhaps, the scrolls found in caves near the Dead Sea on Bible manuscripts, including the fragments of 1 Kings in Qumran Cave 5 and 6).

Although for brevity's sake we have to stop here our brief excursion into the beginnings of the history on plant gall research[48], now in a huge step I would like to come to modern history (roughly spanning the time period from 1500 AD to the present) and make a few comments on three distinguished scientists including the key dates of their relevant publications, to wit Malphigi (1679), Linné (1758) and Darwin (1859), will be repeatedly referred to in the main text.

Plant Galls and Evolution in Modern History

Marcello Malpighi (1628 – 1694 AD), the "Father of Cecidology"



All three figures from https://en.wikipedia.org/wiki/Marcello_Malpighi

On the background of absurd superstitions (for example, many of even the present day uses of plant galls in Italy, e.g. as "powerful amulets against bad luck and illnesses"[49], probably had a long tradition[50]) and, most importantly, of the widespread but totally false idea of spontaneous generation, the Italian physician Marcello Malpighi published his groundbreaking work on plant galls, *De Gallis*, in 1679 describing in sobering detail how these often very conspicuous plant structures develop and thus showed that both – the fantastic superstitions as well as the equally imaginative idea of spontaneous generation – were doubtful or entirely wrong.

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[46] Needless to say, there were no modern recording devices like MP3s, MP4s, digital audio tapes (DAT), CD recorders etc. to which we are so generally used nowadays).

[47] Felix von Oefele (1933): Original title: EINLEITUNG. Vorgeschichte zur Cecidologie der klassischen Schriftsteller. Pp. 1-64 in: Konrad Böhner (1933): Geschichte der Cecidologie. I. Teil (466 pp.) Druck und Verlag von Arthur Nemayer, Mittenwald (Bayern). Apart from some very doubtful assertions on „Urmenschen" and American Indians as "[mögliche] Überreste der Entwicklungsstufe der beiden Steinzeiten", there seems to be factual evidence for the topic of plant galls in non-western Antiquity.

[48] I like to refer the reader being especially interested in this subject up to modern times to the articles and/or books on plant galls by Küster 1911, Swanton 1912, especially the two volumes of Konrad Böhner (see above) (1933): Geschichte der Cecidologie. Vol. I: 466 pp., (1935) Vol. II: 712 pp., Hellrigl 2010 (https://www.zobodat.at/pdf/ForestObserver_005_0207-0328.pdf),Redfern 2011, Bellmann et al. 2018.

[49] Andrea Malossini (2013): Italian Superstitions (English Edition) Kindle. Gall."The most common use, however, is as an antidote for hemorrhoids." Siehe auch Fritz Schremmer (1984) zu einem mittelalterlichen Aberglauben: https://docplayer.org/28290431-Was-wissen-wir-von-pflanzengallen.html

[50] *Cf.* in detail Konrad Böhner (1933), vol. I, pp. 365-430 (for full reference see footnotes above).

Concerning the topic of spontaneous generation – the hypothesis that living creatures of many kinds could arise by a unexceptional and steady process from dead matter – the acclaimed evolutionary biologist Bentley Glass (1906 – 2005), Editor of *The Quarterly Review of Biology* 1944 – 1986, of *Science* 1953, and during his long career President of altogether 8 prestigious American biological societies[51], commented (1959, p. 227) in a special paper on a key motivation of the investigators of the 17th century that "**Before men could believe with full logic in the constancy of species, the ghost of spontaneous generation had to be laid**. Redi's famous and conclusive experiment of 1668, which showed that the maggots that hatch into flies arise exclusively from eggs laid by parent flies, was confirmed by Leeuwenhoek, who affirmed that even the tiniest animalcules or bacteria under his lens were generated from parents of their own kind. Swammerdam, *Malpighi, and Vallisneri, the great microscopic anatomists of the same period, attacked the problem of the generation of* ***gall-flies*** *inside plant galls; and* ***Malpighi and Vallisneri, master and student, discovered the remarkable ovipositors wherewith gall-flies lay their eggs inside of plant buds or between the layers of leaves, and provoke the plant to form protective galls surrounding the developing larva of the insect***."[52]

Well, as just cited, "Before men could believe with full logic in the constancy of species": Of the constancy of species Malpighi was indeed fully convinced: As a preformationist he accepted the stability of species right up to their initial creation. He was repeatedly referred to in the works on '*Physico-Theology: Or a Demonstration of the Being and Attributes of GOD, from his Works of Creation*' (W. Derham, FRS; Boyle Lectures[53]; London 1711 and 1712, reference to Malpighi pp. 140, 151, galls: 386, 390-392, 409)[54], by the way also referring to the **creator Jehovah** twice (pp. 442 and 443), or by the controversial cleric William Dodd[55], M. A., 1760/1761 (although critiquing preformationism in some kind words) referred to Malpighi in his Second Sermon on *The Wisdom and Goodness of God, in the Vegetable Creation, farther considered* (pp. 6, 14, 15). Just to give a brief insight into this paper concerning the world view of most of his contemporaries including that of Malpighi (incidentally the paper is still available at Amazon and other book stores) (1761, pp. 4, 5, 6; capitals and italics by Dodd):

> "Then, we are to treat of the SEED of vegetables. The stupendous wisdom of the almighty creator, is strikingly obvious, in providing so easily, so copiously, and in so unerring a manner, for the perpetual support and continuance of the many thousand vegetables, wherewith he hath variegated the face of the earth. No man can reflect on the great work of creation, when the sovereign Jehovah call'd into existence all the vegetable tribe; without adoring the power, which not only *then* created, but provided for the *sure progagation* of every individual of this tribe to all succeeding ages. *God said*, we read in *Genesis, Let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit, after its kind, whose seed is in itself, upon the earth: – And it was so*. ….. – no new kind of vegetables can be form'd by all the art of man; nor is the *earth*, prolific mother as she seems, capable of producing (so far as we can find) *one new birth*, in the vegetable world; capable of adding one new plant, to the list of Botany, without the aid and intervention of the *plant-enweaving* seed."[56]

Also, famous **John Ray** (1627 – 1705), FRS, in his volume *The Wisdom of God Manifested in the Works of the Creation: In Two Parts* (1714) referred to and quoted Malpighi at length (see pp. 289, 290, 302, galls: 303-305). In the context of his "confident Denial of all Spontaneous Generation" (p. 301) Ray calls attention to Malpighi's *De Gallis*. Is there the evolution of new Genesis kinds in the worldview of Malpighi (being during his last years papal physician in Rome (1691 – 1694) and personal friend of Pope Innocent XII) or John Ray? Ray's answer: "Now Creation being the work of Omnipotency, and incommunicable to any Creature, it must be beyond the Power of Nature or natural Agents, to produce things after that manner."

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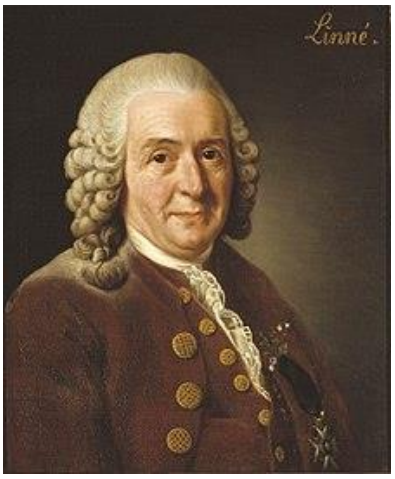
[51] https://en.wikipedia.org/wiki/H._Bentley_Glass (retrieved 24 October 2020)
[52] https://issuu.com/ortizd.julian/docs/eighteenth-century-concepts
Bentley Glass (1960): Eighteenth-Century concepts of the origin of species. Proceedings of the American Philosophical Society 104: 227-234https://en.wikipedia.org/wiki/Robert Boyle
https://issuu.com/ortizd.julian/docs/eighteenth-century-concepts
https://plato.stanford.edu/entries/evolution-before-darwin/
[53] Boyle: "largely regarded today as the first modern chemist" https://en.wikipedia.org/wiki/Robert_Boyle
[54] https://books.google.de/books?id=5vdiAAAAcAAJ&pg=PA409&lpg=PA409&dq=#v=onepage&q&f=false
[55] https://de.wikipedia.org/wiki/William_Dodd_(Geistlicher)
[56] ttps://www.amazon.de/Goodness-Vegetable-Creation-Considered-Preached/dp/138514095X
Moreover, he referred twice to Malpighi in his third sermon on *The Wisdom and Goodness of God, in the Vegetable Creation, farther considered* (1761).

Carolus Linnaeus (1707 – 1778 AD), the "Father of Modern Taxonomy"

Figures from https://es.wikipedia.org/wiki/Carlos_Linneo and https://nl.wikipedia.org/wiki/Carl_Linnaeus (Left: 1739, Middle: 1775)

The conviction of Linnaeus concernig the constancy of species is widely known. What is not so widely known is that he qualified his view to a certain extent on the topic. The best compilation I could detect on the internet so far is by John Wilkins (2007) *evolving thoughts*[57]:

There are as many species[58] as the Infinite Being produced diverse forms in the beginning. [***Species tot sunt diversae quot diversas formas ab initio creavit infinitum Ens***, Fundamenta botanica No. 157, 1736 (quoted in Ramsbottom 1938:196)]

We reckon as many species as there were diverse forms created in the beginning. [***Species tot numeramus, quot diversae formae in principio sunt creatae***, Philosophia Botanica, 1751 (loc. cit.)]

Species are as many as there were diverse [and constant*] forms produced by the Infinite Being; which forms according to the appointed laws of generation, produced more individuals but always like themselves. Therefore there are as many species as there are different forms or structures occurring today. [***Species tot sunt, quot diversas [& constantes*] formas ab initio producit Infinitum Ens; quae formae, secundum generationis inditas leges, produxere plures, at sibi semper similes. Ergo species tot sunt, quot diversae formae s. structurea hodienum occurrant***. Classes Plantarum, 1738 (loc.cit.). *Added in 1764, see Genera Plantarum I: ¶5]

The principle being accepted that all species of one genus have arisen from one mother through different fathers, it must be assumed: That in the beginning the Creator created each natural order only with one plant with reproductive power.

2. That by their various mixings different plants have arisen which belong to the mother's natural order as they are similar to the mother with regard to their fructifications, and are, as it were, species of the order, i.e., genera.

3. We may assume that plants have arisen within the orders, i.e. by genera of one order, may mix with each other. In this way there wil l arise species that should be referred to the mother's genus as her daughters. [Pralectiones (Lectures, 1744), quoted in Larson, (1967:317)]

We say there are as many genera as there are similarly constituted fructifications of different natural species. [***Genera tot dicimus, quot similes contructae fructifications proferunt diversae Species naturales***. Fundamenta Botanica 1736, No 159 (quoted in Ramsbottom 1938:197)]

Every genus is natural, created as such in the beginning, hence not to be rashly split up or stuck together by whim or according to anyone's theory. [***Genus omne est naturale, in primordio tale creatum, hinc pro libitu & secundem cujuscimque theoriam non proterve discindendum aut conglutinandum***. Systema naturae, 1735, (quoted in Ramsbottom 1938:197)]

Species are most constant, since their generation is a true continuation. [***Species constantissimae sunt, cum earum generatio est vera continuatio***. Systema naturae, 1735 (quoted in Ramsbottom 1938:197)]

There are as many varieties as there are different plants, produced from the seed of the same species. [***Varietates tot sunt, quot differentes plantae ex ejusdem speciei semine sunt productae***. Philosophia Botanica 1751 (quoted in Ramsbottom 1938:199)]

Is the plant [Thalictrum lucidum] sufficiently distinct from T. flavum? It seems to me a daughter of time. [Planta, an satis distincta, a T. flavo? ***Videtur temporis filia***. Species plantarum 1753 (quoted in Ramsbottom 1938:201)]

As for plant galls and their insects, many of Linnaeus' names and descriptions are still valid, for example: *Neuroterus quercusbaccarum* (L. 1758), *Liposthenus glechomae* (L. 1758), *Diplolepis rosae* (L.1758), *Aulacidea hieracii* (L. 1758), *Andricus quercusramuli* (L. 1761) etc. (see Hellrigl 2010).

[57] https://scienceblogs.com/evolvingthoughts/2007/05/22/linnaeus-on-species-1 (retrieved 23. Februar 2019 and 24 October 2020). "… towards the end of his life, began to backpedal the extreme fixity of the earlier writings, **calling one such apparent novel species a "daughter of time"** (Gustafsson 1979)." **See, however, Linné already in 1735** (*cf*. quotation above).

[58] Unfortunately, like many of his contemporaries (and even most evolutionists up to the present day), Linné did not differentiate between the Genesis "kinds" and his often morphologically and anatomically characterized "species" (plus *Habitat*). As already mentioned in http://www.weloennig.de/NASGalapagos.pdf: A source with a background in the Hebrew comments concerning "species": "...it should be noted that this term is not found in the Bible book of Genesis. There we find the term "kind," which is much broader in meaning. Often, what scientists choose to call the evolution of a new species is simply a matter of variation within a "kind," as the word is used in the Genesis account" (https://wol.jw.org/en/wol/d/r1/lp-e/1102010233?q=frequently&p=par)

See especially the excellent list of Redfern (2011, positions 10315-10641, Kindle). For gall inducers I counted 16 still valid names (implies descriptions) given by Linnaeus (but 30 including parasitoids and predators of gall causers, plus 10 "other species", so altogether 40), and for host plant species 130 valid names.

Heinz Goerke comments in his book about ***Carl von Linné: Arzt, Naturforscher, Systematiker 1707-1778*** on Linné's motivation (1989, p. 92), among other things: "The certainty of the constant closeness of God and gratitude for his preferred position, which he saw in the fact that he was given the task of the Creator, like a "second Adam" ordering nature and naming the parts of its three kingdoms are hallmarks of his religious outlook."[59]

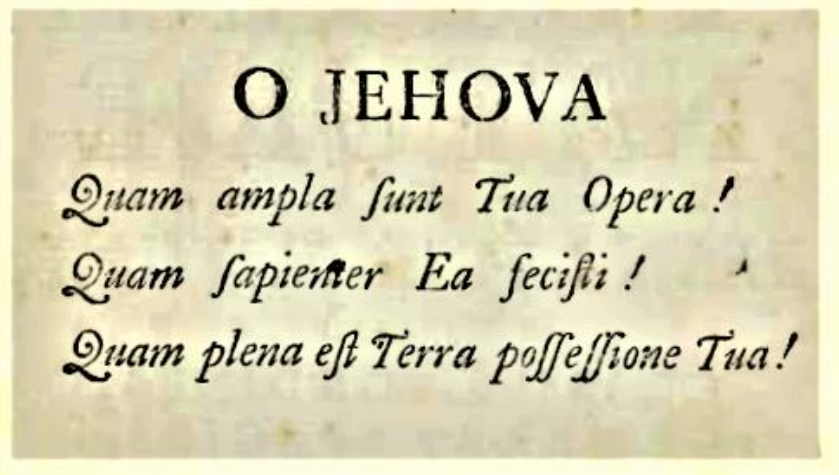
On the question "Why is Linnaeus world-famous" the answer at *Linné online*, sponsored by Uppsala University[60], is this:

> "Linnaeus' way of classifying Nature was so good that this system, called Systema naturae, came to be used all over the world. He simplified the scientific nomenclature of plants and animals. ***This system, with two Latin names for every species of animal or plant, is still used the world over and simplifies communication between scientists, gardeners, birdwatchers etc***. … Linnaeus' idea was that if we learn the Latin names we won't need to know the names in other languages. Even in the same language there are often many dialectal names for the same species. In English the great tit is also called titmouse. In Latin there is only one name, Parus major. Thank you Professor Linnaeus!"

"God created – Linnæus arranged"

> ""Deus Creavit, Linnaeus Disposuit". This could be found in D. H. Stövers biography of Linnaeus from 1792. Eventually could Linnaeus' life-work be concluded in this way and it was perhaps not so strange to him. He had got the privilege to discover the order in the creation of God. Linnaeus had a distinctive feeling for collecting and systematising information."[61]

His motto or guiding maxim (not only) for **the tenth edition of *Systema Naturae*** (1758) was Psalm 104[62], verse 24 (see https://upload.wikimedia.org/wikipedia/commons/a/a2/Sistema_Naturae_%281758%29.pdf):


O JEHOVA

Quam ampla ſunt Tua Opera!

Quam ſapienter Ea feciſti!

Quam plena eſt Terra poſſeſſione Tua!

Or in modern print characters:

O JEHOVA[63]
Quam ampla sunt Tua Opera!
Quam sapienter Ea fecisti!
Quam plena est Terra possessione Tua!

And in English:

How many your works are, O Jehovah!
You have made all of them in wisdom.
The earth is full of what you have made"[64]

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[59] Original German Text: "Die Gewissheit der ständigen Nähe Gottes und Dankbarkeit für seine bevorzugte Stellung, die er darin sah, dass ihm vom Schöpfer der Auftrag zuteil geworden war, wie ein „zweiter Adam" die Natur zu ordnen und die Teile ihrer drei Reiche mit Namen zu belegen, sind Kennzeichen seiner religiösen Anschauung."

[60] http://www2.linnaeus.uu.se/online/life/1_0.html 2008. Responsible Roland Moberg, Executive Editor.

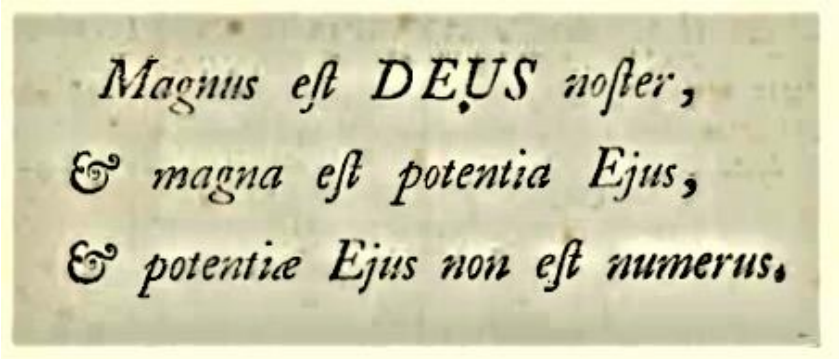
[61] http://www2.linnaeus.uu.se/online/animal/1_0.html

[62] The chapter numbers of the Bible text used by Linné are not necessarily identical with those of our modern Bible translations.

[63] As for the pronunciation of the name, see for example Gérard Gertoux (2002): The Name of God Y.eH.oW.aH Which is Pronounced as it is Written I_Eh_oU_Ah (342 pp. University Press of America) in principal agreement with several further Bible scholars interviewed in Fritz Poppenberg's film (2015): Der Name Gottes. https://www.dreilindenfilm.de/produkt/der-name-gottes/ (also in English). See as well: Hans-Peter Marquardt (2011): The Name Jehovah at the Time of the European Reformation (820 pp.; including about one thousand photographs). Print: Strauss GmbH, Mörlenbach, Germany.

[64] https://www.jw.org/en/library/bible/study-bible/books/psalms/104/

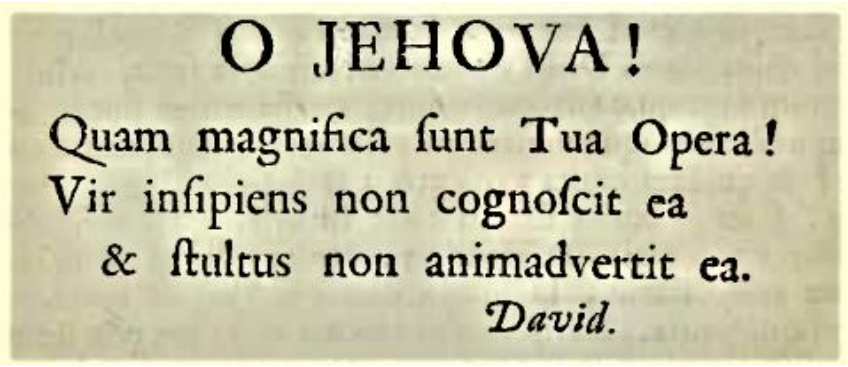
And two pages further Linnaeus continues with Psalm 147, verse 5 (first two lines):


Magnus eſt DEUS noſter,
& magna eſt potentia Ejus,
& potentiæ Ejus non eſt numerus.

Magnus est DEUS noster
& magna est potentia Ejus.
& potentiae Ejus non est numerus

Great is our God,
and great is His power,
and his strength is immeasurable.[65]

And just before the chapter IMPERIUM NATURAE a citation of David (Psalm 92, verses 5 and 6):


O JEHOVA!
Quam magnifica ſunt Tua Opera!
Vir inſipiens non cognoſcit ea
& ſtultus non animadvertit ea.
David.

O JEHOVA! Quam magnifica sunt Tua Opera!
Vir insipiens non cognoscit ea
& stultus non animadvertit ea. *David*.

"How great your works are, O Jehovah!
…No unreasoning man can know them;
And no foolish person can understand this:"[66]

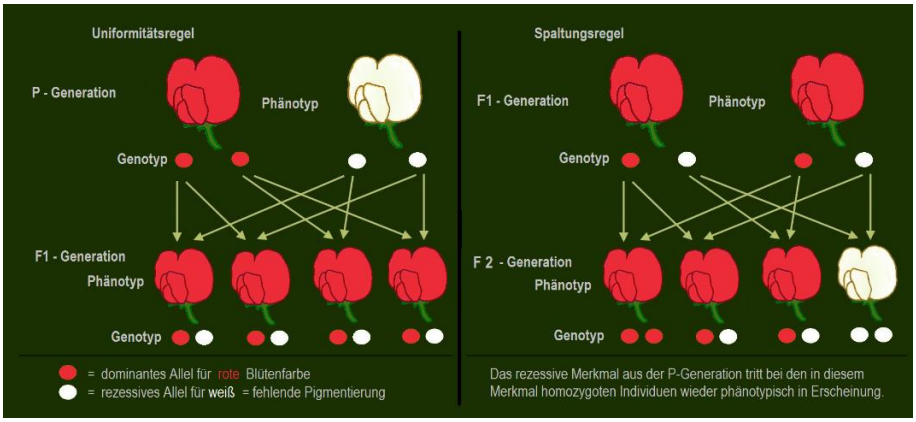
And this is Linné's praise just before the INTROITUS of *Systema Naturae* (1758), from Psalm 71, verse 17: "Docuisti me Deus a juventute mea, & usque nunc pronunciabo Mirabilia Tua." "From my youth you have taught me, O God, and now I would like to proclaim Your Wonders[67]. On pp. 3908/3909 of Caroli a Linné Systema Naturae Tm. I. Pars VI (Classis VI. Vermes) he cites Ecclesiastes 3:11[68], and Psalm 104:27 – 33 (32 excluded). Check, please, if you like, directly the link below (an English translation in the footnote)[69].

[65] https://en.wikiquote.org/wiki/Carl_Linnaeus
[66] https://www.jw.org/en/library/bible/study-bible/books/psalms/92/
[67] https://en.wikiquote.org/wiki/Carl_Linnaeus. **Or**: O God, you have taught me from my youth, And until now I keep declaring your wonderful works. https://www.jw.org/en/library/bible/study-bible/books/psalms/71/
[68] "He has made everything beautiful in its time. He has even put eternity in their heart; ***yet mankind will never find out the work that the true God has made from start to finish***." https://www.jw.org/en/library/bible/study-bible/books/ecclesiastes/3/
[69] https://www.biodiversitylibrary.org/item/83098#page/894/mode/1up English text of the Psalm (https://www.jw.org/en/library/bible/study-bible/books/psalms/104/): "All of them wait for you To give them their food in its season. What you give them, they gather. When you open your hand, they are satisfied with good things. When you hide your face, they are disturbed. If you take away their spirit, they die and return to the dust. If you send out your spirit, they are created, And you renew the surface of the ground. The glory of Jehovah will last forever. Jehovah will rejoice in his works. I will sing to Jehovah throughout my life; I will sing praises to my God as long as I live."

Gregor Mendel (1822 – 1884 AD) the "Father of Modern Genetics"



Left: Mendel as young man: https://www.faz.net/aktuell/stil/drinnen-draussen/gregor-mendel-bis-zur-letzten-huelse-14284850.html
In 1865: https://de.wikipedia.org/wiki/Mendelsche_Regeln
https://www.kampocesku.cz/artikel/21481/geburtshaus-von-johann-gregor-mendel-in-der-gemeinde-vrazne



https://upload.wikimedia.org/wikipedia/commons/a/ae/Uniformit%C3%A4tsregel_-_dominant-rezessive_Vererbung.png

It appears to have largely been forgotten that Mendel had not only worked with peas but had also extended his *Pisum* investigations to a series of further plant species: *Aquilegia, Antirrhinum, Calceolaria, Campanula, Carex, Curcurbita, Dianthus, Geum, Hieracium, Ipomea, Lathyrus, Linaria, Lychnis (Melandrium), Matthiola, Mirabilis, Pirus, Potentilla, Prunus, Sedum* (?), *Tropeolum, Verbascum, Veronica, Viola and Zea* (Iltis, 1924, p. 103).

Unfortunately, except for *Hieracium*, he did not publish about these studies. Nevertheless, he necessarily must have seen also some plant galls during his many investigations. As in the cases of the 'evolutionary' philosophers mentioned above (from Thales to Lukrez), we can only infer that he would have applied his basic discoveries and inferences also to the origin and evolution of plant galls and their insects.

What were his basic inferences? To recall some points from my extensively peer-reviewed article *Mendel's Paper on the Laws of Heredity* (1866): *Solving the Enigma of the Most Famous 'Sleeping Beauty' in Science* (Lönnig 2017) http://www.els.net/WileyCDA/ElsArticle/refId-a0026823.html (pp. 5 and 6):

> The laws of inheritance revealed by him [Mendel] were perceived to be the laws of constant elements – stable in time, as he had emphasized in his correspondence with Nägeli – and relevant for both, generating a great but nevertheless finite variation in the culture varieties of the plant breeders and equally significant for and applicable to an abundant yet nonetheless limited divergence of species in the wild (Mendel, 1866, pp. 36, 46, 47). In his brief paper of 45 pp (pp. 3–47) on *Experiments in Plant*

Hybridization, Mendel perpetually speaks of 'constant characters', 'constant offspring', 'constant combinations', 'constant forms', 'constant law', 'a constant species', etc. (in such combinations, the adjective **'constant' occurs altogether 67 times** in the German original paper). He was convinced and also directly stated that the laws of heredity he had discovered substantiated Carl Friedrich von Gärtner's conclusion (1848) '***that species are fixed with limits beyond which they cannot change***' (Mendel, 1866, pp. 46/47; emphasis added). And as Theodosius Dobzhansky, perhaps the foremost founder of the neo-Darwinian synthesis, aptly put it (1955, p. 183): 'It is…not a paradox to say that if someone should succeed in inventing a universally applicable, static definition of species, he would cast serious doubts on the validity of the theory of evolution.'

To quote Mendel on Gärtner directly (1866, p. 46):

> 'Gärtner by the results of [his] transformation experiments, was led to oppose the opinion of those naturalists who dispute the stability of plant species and believe in a continuous evolution of vegetation. He perceives in the complete transformation of one species into another an indubitable proof that species are fixed within limits beyond which they cannot change[70]. Although this opinion cannot be unconditionally accepted we find on the other hand in Gärtner's experiments a noteworthy confirmation of that supposition regarding variability of cultivated Plants which has already been expressed.'

Lenval A. Callender of the London University Institute of Education comments on this passage as follows (1988, p. 54):

> 'Despite its clarity this paragraph has been a source of endless confusion in the literature. If this statement is to be taken literally, as Mendel most assuredly intended it to be taken, then it says quite simply that he gave *conditional acceptance to the view, expressed by Gärtner, "that species are fixed within limits beyond which they cannot change."* Nothing could be clearer. Nevertheless, interpretations of this passage have been given which are remarkable for their extreme departure from accepted use in both the German and English languages' (italics by Callender).

Bishop (1996, p. 208) concurs with and corroborates Callender's conclusion by further arguments.

To continue the text from my paper mentioned above:

…Also, Mendel – writing on the variability of cultivated plants – confirmed his view on the stability of species by the ensuing deeply thought out comment (1866, p. 36; italics added):

> 'The opinion has often been expressed that the stability of the species is greatly disturbed or entirely upset by cultivation, and consequently there is an inclination to regard the development of cultivated forms as a matter of chance devoid of rules; the colouring of ornamental plants is indeed usually cited as an example of great instability. It is, however, not clear why the simple transference into garden soil should result in such a thorough and persistent revolution in the plant organism. No one will seriously maintain that in the open country the development of plants is ruled by other laws than in the garden bed. Here, as there, typical changes must take place if the conditions of life be altered, and the species possesses the capacity of fitting itself to its new environment. It is willingly granted that by cultivation the origination of new varieties is favored, and that by man's labour many varieties are acquired which, under natural conditions, would be lost; ***but nothing justifies the assumption that the tendency to formation of varieties is so extraordinarily increased that the species speedily lose all stability, and their offspring diverge into an endless series of extremely variable forms***.' Thus, in Mendel's view, endless evolution was neither probable for cultivated plants nor for species in the wild (see for further support and scientific expansion of Mendel's views Lönnig, 1993, 2005b, 2011, 2012, 2014).

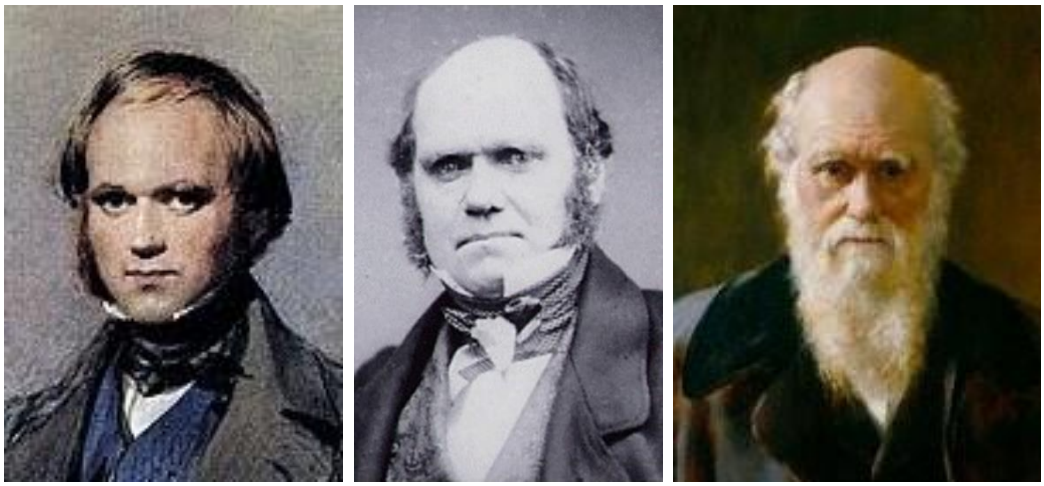
For all the references, see please the original eLS article.

Perhaps I should emphasize that – as I have pointed out in my endorsement for the book by Matti Leisola & Jonathan Witt (2018) *Heretic: One Scientist's Journey from Darwin to Design* https://www.discovery.org/b/heretic/ – that accepting ID (not to mention the laws of heredity) does not mean accepting the dogmata of some 1700 years of church history, to wit:

> Matti Leisola has written the exciting story of almost the entire spectrum of aberrant motives, absurd fears, and unreasonable reactions to intelligent design (ID) by evolutionary scientists, clergymen, and church institutions alike, notably during his career as a scientist over the last some forty years. ***I would add a word on the fears of so many critics that accepting ID also means accepting the dogmata of some 1700 years of church history. ID is thoroughly neutral concerning such topics***. So, the reader is invited to carefully check the historical and, what is more, the enormous wealth of scientific data [professor] Matti Leisola has presented in the present book: Test them carefully with an open mind and form your own independent opinion!

[70] It may sound somewhat contradictory when Gärtner – by the "complete transformation of one species into another" – critiques the theory of evolution. However, he drew his conclusion from the ***regularity and limits of the possibilities of change*** in his many careful experiments.

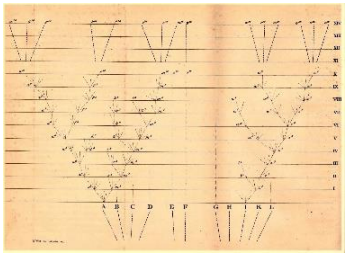
Charles Darwin (1809 – 1882 AD) the "Father of Natural Selection"



From left to right: Charles Darwin 1840, 1854, 1881: For the detailed references of the authors of the Portraits (here only sections by W.-E. L of the watercolour, photograph, and the painting): see https://de.wikipedia.org/wiki/Charles_Darwin

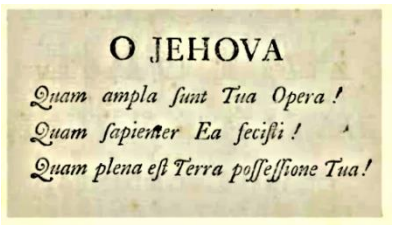
The worldview contrast between Carolus Linnaeus and Charles Darwin can hardly be exceeded/surpassed.

Guiding maxims of Darwin



"***I would give absolutely nothing for the theory of natural selection, if it require miraculous additions at any one stage of descent***."[71]
"There seems to be **no more design** in the variability of organic beings, and in the action of natural selection, **than in the course which the wind blows**."[72]
"I look at the term ***species as one arbitrarily given for the sake of convenience*** to a set of individuals closely resembling each other, and that it does not essentially differ from the term variety" (1859, p. 52).[73]
"…the small differences distinguishing varieties of the same species, will steadily tend to increase till they come to equal the greater differences between species of the same genus, or even of distinct genera." And this goes on as follows (Darwin explainig on p. 128 his Figure from p. 116) "…
…***genera related in different degrees, forming sub-families, families, orders, sub-classes, and classes***." [74]

Guiding maxims of Linné (to repeat and augment):



"**How many your works are, O JEHOVA!** You have made all of them in wisdom. The earth is full of what you have made."
"How many your works are, O JEHOVA! ***No unreasoning man can know them: And no foolish person can understand this***."[75]
"There are as many species as the Infinite Being produced diverse forms in the beginning."
"***Every genus is natural, created as such in the beginning***, hence not to be rashly split up or stuck together by whim or according to anyone's theory."
"I saw the eternal, omniscient and omnipotent God on His back, when He went past and I became dizzy! ***I traced His footsteps over nature's field*** and noticed in everything, even in those things I could scarcely discern, an infinite wisdom and might, an unfathomable perfection.
"He is an everlasting and eternal Divine being, who is neither created nor born. ***Without this Being nothing will exist, but He has established and built all this***;"[76]

If you google the question "*How-many-species did Carl Linnaeus classify?*" Or: *How many species did Linnaeus name*? You immediately will get a series of internet sites answering this question: About **4,400 animal names and 7,700 plant names** (so altogether 12,100; other

[71] https://www.darwinproject.ac.uk/letter/DCP-LETT-2503.xml Charles Robert Darwin Letter to Charles Lyell (11 October 1859)
[72] Charles Robert Darwin: Autobiography http://darwin-online.org.uk/content/frameset?itemID=F1497&viewtype=text&pageseq=1
[73] http://darwin-online.org.uk/content/frameset?itemID=F373&viewtype=text&pageseq=1
[74] See the scientifically tested arguments against these ideas in, for instance: **Paleontology** and **the Explosive Origins of Plant and Animal Life** A Dialogue with an Evolutionary Geologist on Gradualism and Intelligent Design: http://www.weloennig.de/ExplosiveOrigins.pdf (2018)
[75] See previous page.
[76] Caroli Linnaei (1758) Systema Naturae: https://upload.wikimedia.org/wikipedia/commons/a/a2/Sistema_Naturae_%281758%29.pdf (824 pp.) English translation as given by http://goran.waldeck.se/Ento2Eng.html

sources speak of "more than 13,000"[77]) – a gigantic work! (Also, considering Linné's ***complete work***, my impression is that it surpasses that of Darwin (large as it is) nevertheless by far[78].

Unfortunately, there is as yet no website for Linné comparable to that of Darwin online[79], showing all his books, papers and correspondences (including translations of his work in many different languages – as Text, Image, and PDF –, not to mention commentaries of different contemporary and further authors).

If you take Darwin's name as a substitute for Linnaeus asking: "*How many species did Charles Darwin classify*"? Or: *How many species did Charles Darwin name*? You will get ***no numbers at all*** on Darwin's naming and classifying new species (as of 16 November 2020) but usually (and quite unexpectedly) answers on a basically different question: *How many species are named after Charles Darwin* (for example "more than 120 Species" and even "301 animal taxa" listed by Dragana Miličić et al. 2011[80]).

So, did Darwin name and classify any species at all? Yes, he definitely did! After a random sample survey into his four monographs 1851a/1851b and 1854a/1854b about barnacles (Cirripedia)[81] my educated guess is that he named and described ***perhaps about some 150 new taxa***.[82] "His research on barnacles (Cirripedia) gave him a reputation as a respected zoologist and taxonomist [in addition to his geological writings] in the mid-1850s."[83]

Nevertheless, Darwin's some **150** taxa as compared to the enormous work of "more than **13,000**" by Linnaeus, Darwin's work – valuable as it was – may perhaps be classified as being somewhat modest.

Darwin wrote 1851, p. X, in his first monograph on barnacles:

> "In accordance with the Rules of the British Association, I have faithfully endeavoured to give to each species the first name attached to it, **subsequently to the introduction of the binomial system, in 1758, in the tenth edition of the 'Systema Naturæ'** [of Linnaeus]."[84]

Kevin Padian comments on Darwin's view of the "Natural System" of his days, in the final analysis focusing on Linné:

> "Mayr (1982) was correct that **Darwin was contemptuous of the Natural System**. Darwin (1859) traced this system, in its various forms, **to Linnaeus** and other authors of the18th and 19th centuries, noting that … it incorporated **both similarity and Divine Plan**."[85]

How did plant galls originate according to Darwin? Already in 1843 (i.e. 16 years before he published his *Origen of Species* in 1859) he wrote in a letter to G. R. Waterhouse:

> "Most authors say it is an endeavour to discover the laws according to which the Creator has willed to produce organized beings – But what empty high-sounding sentences these are – it does not mean order in time of creation, nor propinquity to anyone type, as man. – in fact, it means just nothing. – According to my opinion, (which I give everyone leave to hoot at ...) classification consists in grouping beings according to their actual relationship, i.e., their consanguinity, or descent from common stocks."[86]

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[77] https://biology.stackexchange.com/questions/8183/how-many-species-did-carl-linnaeus-classify
[78] https://www.biodiversitylibrary.org/item/178970#page/346/mode/1up
[79] http://darwin-online.org.uk/
[80] https://www.researchgate.net/publication/249341964_HOW_MANY_DARWINS_-_LIST_OF_ANIMAL_TAXA_NAMED_AFTER_CHARLES_DARWIN see also https://en.wikipedia.org/wiki/List_of_things_named_after_Charles_Darwin#cite_note-2
[81] http://darwin-online.org.uk/content/frameset?itemID=F339.1&viewtype=text&pageseq=1
http://darwin-online.org.uk/content/frameset?itemID=F339.2&viewtype=text&pageseq=1
http://darwin-online.org.uk/content/frameset?itemID=F342.1&viewtype=text&pageseq=1
http://darwin-online.org.uk/content/frameset?itemID=F342.2&viewtype=text&pageseq=1
[82] Of the genus *Balanus*, I counted **17** species as classified by Darwin of altogether 105 (see http://www.marinespecies.org/aphia.php?p=taxlist), *Tetraclita* **4** by Darwin out of 36, *Elminius* **2** of 4, *Purgama* **2** of 15, *Creusia* zero of 4, *Pachylasma* **1** of 19, *Verruca* **2** of 45, *Scalpellum* **3** of 268, *Pollicipes* zero of 16 (2 had already been determined earlier), *Lepas* **2** of 35, *Poecilasma* **4** of 21, so **37** out of **568** species. This may be about a quarter of the entire number of Cirripedia he classified. To find out the exact number would necessitate an intensive in-depth study.
[83] Original German text: "Seine Untersuchungen an den Rankenfußkrebsen (Cirripedia) verschafften ihm Mitte der 1850er Jahre zusätzlich [zu seinen geologischen Schriften] einen Ruf als angesehener Zoologe und Taxonom." https://de.wikipedia.org/wiki/Charles_Darwin
[84] http://darwin-online.org.uk/content/frameset?itemID=F339.1&viewtype=text&pageseq=1
[85] https://academic.oup.com/sysbio/article/48/2/352/1670367
[86] Quoted according to Kevin Padian (1999, p. 354): https://academic.oup.com/sysbio/article/48/2/352/1670367

However, considering 'the laws according to which *evolution* has produced organized beings' in line with today's evolutionary consanguinity theories, Darwin has run into a mass of even more limits and contradictions and, in their final analyses, most of the basic points of his speculative theory "in fact, mean just nothing" (for an in-depth discussion of *The Animal Tree of Life* (title of chapter 6), see Stephen C. Meyer 2013, pp. 114-135 in *Darwin's Doubt* (HarperOne, New York): Molecules *vs*. Molecules (p. 119), Molecules *vs*. Anatomy (p. 121), Anatomy *vs*. Anatomy (p. 125) … A Forest of Trees (p. 135).[87]

Most of Darwin's basic ideas were wrong, including those on the origin of plant galls (macro-evolution). To make a long story short, I'm going to repeat here the abstracts of my two articles on *Plant Galls and Evolution*:

Abstracts of *Plant Galls and Evolution* of Part I (2017) and Part II (2020)

Plant Galls and Evolution (I): How More than Twelve Thousand Ugly Facts are Slaying a Beautiful Hypothesis: Darwinism (2017)[88]:

> For more than 330 years now it has been known that the service provided by the plants for gall formation "results in their own disfigurement" (Malpighi 1679). Massive infestations can induce stunting, chlorosis, wilting, and even death in certain plant species. Diameter of stem and the total height can be distinctly reduced. We even speak of "gall disease" (cecidiosis) in the case of heavy infestations adversely affecting the plants in culture and/or in the wild. However, in almost all the cases of what may be called 'slight infections', the effects are not so strongly deleterious and the plants seem to control and survive the parasitic load without major damage.
>
> For the gallers the plants usually provide optimal nutrition (feed and house the larvae), administer excellent microenvironments, enemy escape, produce safe and comfortable homes protecting their hosts (inter alia by phenolic compounds as tannic and gallic acid, displaying antioxidant, anti-bacterial, anti-inflammatory, and anti-fungal properties). In some cases, the plants even form "a closure similar to that of the ground-glass cap of a liqueur bottle" – to open exactly at the right time and in the optimal form – so that the parasite can easily press it out when ready for pupation. Also, some investigations have shown that proteins of inner-gall and plant tissue were "characteristic only for gall tissues". Moreover, "the chlorenchyma cells within the nutritive tissue are generally homogenous and usually include a large nucleus, conspicuous nucleolus, high enzymatic activity, RNA richness, fragmented vacuole, numerous mitochondria, a dense/abundant cytoplasm, and the accumulation of carbohydrates (and lipids in some systems)" (Richardson et al. 2017); for additional special features, see text. As to a synopsis of the present state of the molecular investigations, cf. footnote 171 on p. 59. To sum up: For insects, for example, the plants provide an unsurpassed five-star luxury hotel for free for the entire larval development (and often even more; see please below).
>
> In short, entirely new organs (complex, refined, sophisticated, "high tech" galls), consisting of up to seven differentiated layers with diverse positive functions for the guests, are formed at the exclusive expense of the plant host, i. e. without any useful return by the animals ("fremddienliche Zweckmäßigkeit" (Erich Becher) – not easy to translate, but something like 'extrinsic usefulness', 'disinterested suitability', 'well-directed extraneous utility', closely akin to altruism; cf. p. 16).
>
> Now, Darwin formulated the following falsification criterium, among others, for his theory of natural selection – fully applicable to the modern neo-Darwinian versions of the theory as well, because: "Natural selection cannot possibly produce any modification in any one species exclusively for the good of another species; "… If it could be proved that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory, for such could not have been produced through natural selection." Also: "Natural selection can produce nothing in one species for the exclusive good or injury of another; though it may well produce parts, organs, and excretions

[87] See also Joachim Illies: (1983): Der Jahrhundert-Irrtum. Umschau Verlag, Frankfurt am Main (pp. 90-121: Im **Wunderland der Stammbäume – Baumkunde einer Illusion**.)
[88] http://www.weloennig.de/PlantGalls.pdf

highly useful or even indispensable, or again highly injurious to another species, but in all cases at the same time useful to the possessor."

Inference reached on the basis of the evidence: Because in the case of the galls, in thousands of plant species often entirely new organs have been formed for the exclusive good of more than 132,930 other species, these 'ugly facts' have annihilated Darwin's theory as well as the modern versions of it. The galls are not 'useful to the possessor', the plants. There is no space for these phenomena in the world of "the selfish gene" (Dawkins). Moreover, the same conclusion appears to be true for thousands of angiosperm species producing deceptive flowers (in contrast to gall formations, now for the exclusive good of the plant species) – a topic which should be carefully treated in another paper.

And **Plant Galls and Evolution (II): Natural Selection, DNA, and Intelligent Design. Or: The proof that complex structures of thousands of species have been formed for the exclusive good of other species thus annihilating Darwin's theory**[89]:

Several recent DNA/RNA and further molecular studies have corroborated the expectations and predictions made by morphological, anatomical and biochemical research on insect-triggered plant galls during the last some 150 years: These ingenious inter-kingdom complexities, co-adaptations and synorganizations are reflected by correspondingly intricately fine-tuned and exactly (key and lock-like) fitting synorganized structures and systems on the level of molecular genetics.

In the "intimate biochemical interactions" (Body et al. 2019), "hundreds of homologous novel effector proteins" (Stern et al. 2020) generated by the insects can be involved triggering the wide range of "services galls provide" (Harris and Pitzschke 2020), often producing "new organs", or "novel organs", "highly specialized plant organs", "unique organs", "de novo plant tissue or organ", also called "neoformed plant organs", and "ectopic organ[s]" and "entirely new generation of forms" , displaying "good, constant, and definite characters" or "true forms as does any independent organic being", in the overwhelming majority characterized also by strict "host specificity" (including the usually strongly different gall forms of insects displaying alternating generations often on distinct plant hosts).

Comparing the respective galls with their surrounding plant tissue, in one example "535 genes are differentially expressed" (Narendran et al. 2020), displaying in another case "no clear similarity, being "dramatically altered" (Hirano et. al. 2020), and in a further instance, of "26,346 grape transcripts expressed in either gall or leaf or both…11,049 were differentially expressed" (Schultz et al. 2019).

Having cited Darwin above with his words "If it could be proved that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory for such could not have been produced through natural selection" and Otto Braun and Erich Becher formulating the ensuing basic question for all selection theories – old and modern alike: "But how are we to understand the appearance of entirely new formations that are completely absent from normal host plants? How did the plants achieve potentials for totally new structures [exclusively] serving other beings? Can the principle of selection help us? No, it fails completely – for how can a selection for altruistic potentials arise?" And in addition that, "according to Darwin, the plants without galls should have an advantage over those with galls, and so in the course of evolution the gall-free variants among the plants should have been chosen very soon and everywhere as the fittest ones" (Illies), which is denied by the facts, – I have discussed in detail the objections raised by Darwinians and neo-Darwinians against such criticisms in the analysis below.

Result: The evolutionary objections and explanations have been found wanting on all biological levels (*cf.* corresponding chapters): Why the solution proposed by Ernst Mayr and Richard Dawkins has failed: Further evidence / Plant genome potential for gall formation / Extended phenotypes of animals and plants / Plant galls: Darwin, Redfern and Straton on natural selection.

> [To repeat: Joachim Illies (a former Director at the Max-Planck-Institute for Limnology, Plön, Außenstelle Schlitz, Professor at the Universities of Gießen and Kiel) was right: "For the plant, the entire effort involved in the gall formation is of no apparent benefit, it is more of a harm because it requires nutrients, reduces the assimilating leaf area and disrupts the normal course of growth, sometimes even the most valuable parts of the plants: buds and seeds. Consequently, according to Darwin, the plants without galls should have an advantage over those with galls, and so in the course of

[89] http://www.weloennig.de/PlantGalls.xyz.pdf

evolution the gall-free variants among the plants should have been chosen very soon and everywhere as the fittest ones [which obviously is not the case].”]

In the last chapter the criteria for intelligent Design have been quoted (Explanatory Filter: “Roughly speaking the filter asks three questions and in the following order: (1) Does a law explain it? (2) Does chance explain it? (3) Does design explain it?” “The Explanatory Filter faithfully represents our ordinary practice of sorting through things we alternately attribute to law, chance, or design” – “no magic, no vitalism, no appeal to occult forces” are involved (Dembski). And, indeed: “Inferring design is widespread, rational, and objectifiable.”

Also, among additional points, the criterium of “irreducible complexity” (Michael J. Behe) is briefly mentioned. After enumerating several further tasks and scientific projects for plant gall research, this is my conclusion concerning the question, which of the criteria identifying intelligent design appear to be fulfilled according to our present biological knowledge:

– Vast improbability: fulfilled.
– Specification: fulfilled.
– Purpose: fulfilled.
– Coadaptation/Synorganization: fulfilled (even between kingdoms, “inter-kingdom”).
– Irreducibly complexity: most probably fulfilled by many examples.
– Dormant, usually non-appearing form-building abilities [that] can be awakened in the plant: fulfilled.
– Plant ‘altruism’: fulfilled.
– Insects use complex compositions of proteins for gall induction in coordination with, or attuned to, the potential of gall formation in the affected plants: fulfilled.

Although many research questions are still open, the reader is invited to decide for himself whether he/she can already draw the conclusion to intelligent design for many of the plant gall phenomena.

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[i] Trivia: “The reference work The Historians’ History of the World observed: “Even calendars today are based on the year that Jesus was thought to have been born. “Dates before that year are listed as B.C., or before Christ,” explains The World Book Encyclopedia. “Dates after that year are listed as A.D., or anno Domini (in the year of our Lord).”” https://wol.jw.org/en/wol/d/r1/lp-e/1101991001?q=year&p=sen#h=8 Although numerically not quite correct – Jesus was probably born in the year 2 BCE (Before our Common Era), our entire calendar system (whatever it is called) still focuses on Jesus’ time on earth. “According to the international standard for calendar dates, ISO 8601, both systems are acceptable.” https://www.timeanddate.com/calendar/ce-bce-what-do-they-mean.html
(As an endnote on 10 December 2020)

Supplement to p.7 on “soul” by Lutheran theologian Anders Nygren (in his book *Eros and Agape* 1955, p. 152; Evangelische Verlagsanstalt Berlin): "Wenn Platon von der Seele spricht, klingt stets der Gedanke von der Unsterblichkeit der Seele mit an. Die Unsterblichkeit gehört zur natürlichen Ausrüstung der Seele. Sie ist ein Ausdruck für den göttlichen Ursprung der Seele. Für die Rückkehr der Seele zu ihrem göttlichen Ursprung ist nichts weiter erforderlich, als daß die Seele sich reinigt und sich von der Verbindung mit dem Sinnlichen befreit. Das göttliche Unsterblichkeitsleben ist ihr normaler Zustand.

Dieser Gedanke der natürlichen Unsterblichkeit der Seele ist dem Agapemotiv völlig fremd. Hier begegnet uns vielmehr der Glaube an die Auferstehung der Toten. Dauernd sind im Laufe der Geschichte der Glaube an die Unsterblichkeit der Seele und der Glaube an die Auferstehung der Toten miteinander verwechselt worden, obwohl sie doch zwei entgegengesetzten religiös-ethischen Welten angehören.

Wenn die natürliche Unsterblichkeit der Seele zum religiösen Grunddogma wird, kann man ziemlich überzeugt davon sein, daß man sich in der Erossphäre befindet.

Wo dagegen das Agapemotiv die Führung hat, kommt dies regelmäßig im Glauben an die Auferstehung der Toten zum Ausdruck. Wenn der Mensch an Gottes ewigem Leben teihaben kann, so hat dies seinen Grund nicht in der eigenen natürlichen Beschaffenheit oder Ausrüstung des Menschen, sondern es gründet sich ausschließlich auf eine göttliche Machttat. Wie Gott den Sünder gerecht macht, macht er auch die Toten lebendig. Die Auferstehung ist das Siegel der göttlichen Liebe."

An English translation: “When Plato speaks of the soul, the thought of the immortality of the soul always resonates. Immortality belongs to the natural equipment of the soul. It is an expression for the divine origin of the soul. For the return of the soul to its divine origin nothing more is necessary than that the soul purifies itself and frees itself from the connection with the sensual. The divine immortality life is its normal state.

This idea of the natural immortality of the soul is completely foreign to the agape motif. Here we rather meet the belief in the resurrection of the dead. In the course of history, the belief in the immortality of the soul and the belief in the resurrection of the dead have been permanently confused with each other, although they belong to two opposite religious-ethical worlds.

When the natural immortality of the soul becomes the basic religious dogma, one can be fairly convinced that one is in the Erossphere.

Where, on the other hand, the agape motive has the lead, this is regularly expressed in the belief in the resurrection of the dead. If man can participate in God's eternal life, this has its reason not in man's own natural constitution or equipment, but it is based exclusively on a divine act of power. As God makes the sinner righteous, He also makes the dead alive. The resurrection is the seal of divine love.”

Translated with www.DeepL.com/Translator (free version) / (slightly changed)