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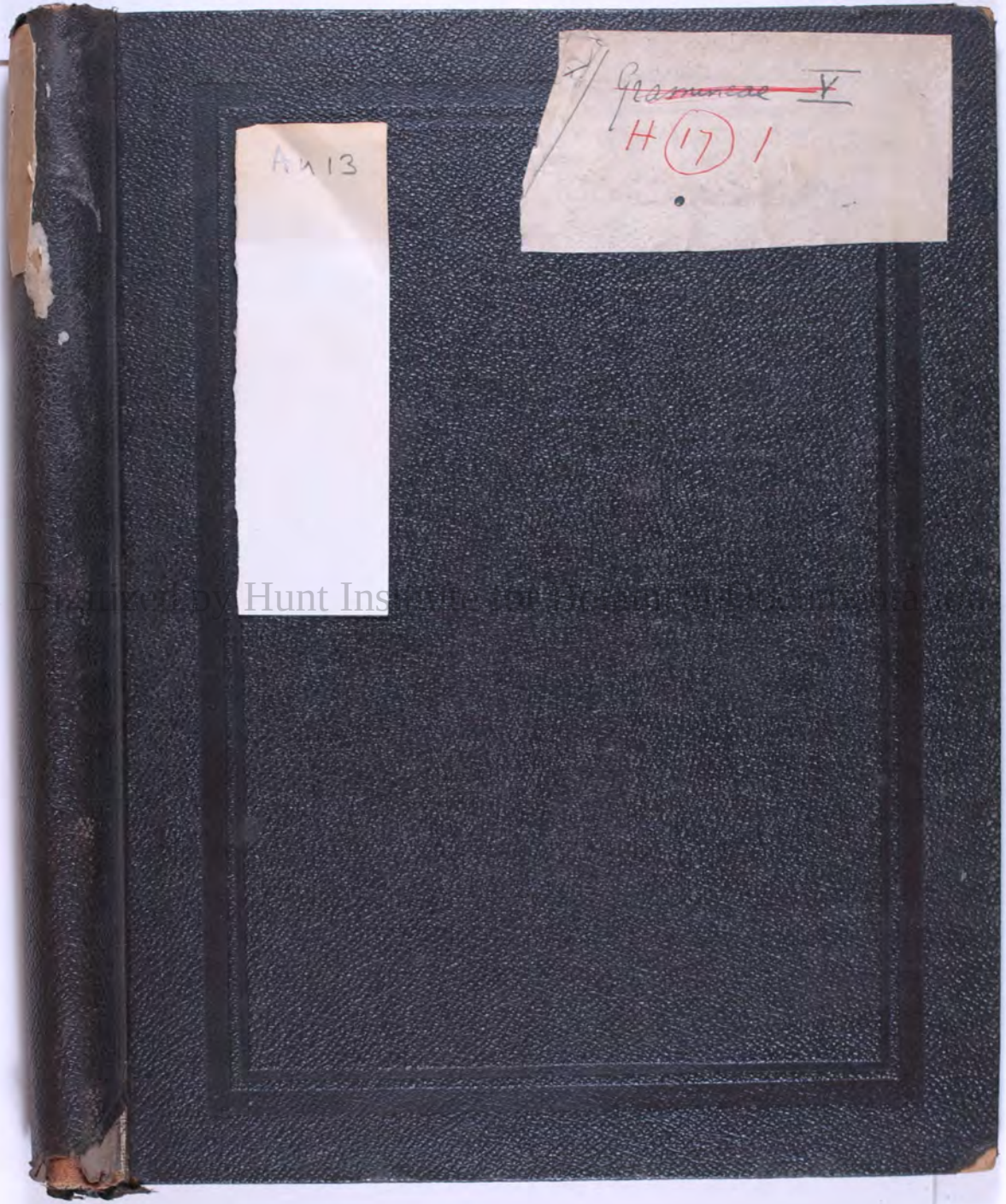
Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.



See also Vol II

b 122

Afagum – dim the parts of plants term are confused.

e.g. he shows that various plants which are called leafless really have leaves e.g. Orobanche & Dentaria

[His purposes are both very much for negative criticism – showing where previous writers are wrong. Very clear & incisive – great gift of tabulation & definition & a keen insight into forms A. A.]

E. L. Grew 45 Fitzjohns Avenue
(Private Hotel) NW3
E. C. Grew 84 Murray Avenue Bromley
E. M. Grew 31 Wimborne Gardens
W13
F W Grew 38 Amis Road E9
Mrs H. Grew 63 St Gabriels Rd
NW2
J. Grew 34 ~~Wathan~~ Warham Rd Croydon
James T Grew 2 St Leonards Rd
Croydon
Louis Grew 6 Valence Rd
Stanmore
(Chtd accountant)
Mrs Mary Grew 120 Manor St
W.C.
Marianne Grew 4 Valence Rd
Stanmore
Norman A Grew 185 B
Haverstock Hill
NW3
Mrs Rosie Grew 122 Chambers
Rd NW10
Willesden
S Grew F47
Culmington Rd
W13
Ealing

Grews in London
1939

Edwin Sharpe Grew b. 1866
M A Christi. 47 Oakley St. SW3.
Romance of modern geology

Fig 1 "Sheweth a Bean with the two Lobes laid open somewhat wider than the Parts, without a Rupture, will well bear, for the better sight of that Part which lieth between them."

Fig 2 — aaaa The two Lobes
b The Radicle
c The Plume
eeee The seminal Root

Fig 3 — The Lobe of a Bean cut athwart

Fig 4 — The Plume cut athwart

Fig 5 — A Lobe of a Cound-Seed.

Fig 6 — A great white Lupine

Fig 15 Sheweth a small piece of the Trunk of Burdock

Fig 16 The slice of a Trunk of divers years growth

Fig 17 slice of young trunk of Burdock

Fig. 3.

Photograph of p. 30 of "The Comparative Anatomy of Trunks" by Nehemiah Grew. London. 1675. The annotations + marginal notes are believed to be in the authors own hand-writing. British Museum. Printed Books Depart.: 972.a.10

Fig 1. Effigies Authoris. R. White ad Vivum delin. et Sculpsit. Frontispiece to Cosmologia Sacra. by D. Nehemiah Grew. London 1701.

Descr. / Plate.

"part of a Vine-Branch cut transversly, & also split Half way down the midle, x x x Shewing the Position of the Bladders in the Barque-Pits in perpendicular Rows; in the insertions, in Horizontal Rows"

Tab XXXVI

The Anatomy of Plants. 1682

Fig 2

Plate from Anatomy of Plants Begun. 1672.

Descr: much shortened from Grew's descr:
Figs 1-4 Bean seed.
Fig 1. Bean Opened out. Fig 2. Same 5
shew "seminal root". Fig 3 "Lobe" cut across
Fig 4 "Plume" cut across.
Fig 5. Gourd - Lupine seed Fig 15, 16, 19
Anatomy of Burdock.

I
5

The Anatomy of Vegetables Begun.
With a general Account of Vegetation Founded thereon.

Nehemiah Grew
1672

(Ded^d to John, Bishop of Chester)

"Of what antiquity the Anatomy of Animals is, & how great have been its Improvements of later years, is well known. That of Vegetables is a Subject which from all Ages to this day hath not only lain by uncultivated; but for ought I know, except some Observations of some of our own Countrey-men, hath not been so much as thought upon. Whether for that the World hath been more enamoured with the former, or pity to humane frailty hath more obliged to it, or other Reasons, I need not enquire. But considering that both came at first out of the same Hand, & are therefore the Contrivances of the same Wisdom; I thence fully assured my self, that it could not be a vain Design, though possibly unsuccessful, to seek it in both."

Description of seeds

p 2. The Scarlet Garden Bean.

Cloathed with a double Vest or Coat: These Coats, while the Bean is yet green, are separable, & easily distinguished. When 'tis dry, they cleave so closely together, that the Eye, not before instructed, will judge them but one; the Inner Coat likewise (which is of the most rare Contexture) so far shrinking up, as to cover only the roughness of the outer, somewhat resembling Wafers under Magnarooms.

At the thicker end of the Bean, in the outer Coat, a very small Foramen presents it self: In dissection this found to terminate against the point of that part which I call the Radicle, whereof I shall presently speak.

P. 8. Mentions the Plumule & continues:—
"For the sake of this Part principally it is, that the Bean is divided into Lobes; &c. that it may be warmly & safely lodged up between them; & so secured from the Injuries to tender a Part would sustain from the Mould, whereto the Main Body becoming, it must have lain contiguous. This Part is not, like the Radicle an entire Body, but divided at its loose end into divers pieces, all very close set together, as Feathers in a Bunch; for which reason it may be called the

Plume. They are so close, that only two or three of the outmost are at first seen ×: but upon a nice & curious separation of these, the more interiour still may be discovered. ~~Have~~ × × ^

× × In a French Bean the two outmost are very fair & elegant. In the great Garden-Bean, two extraordinary small Plumes, often, if not always, stand one on either side the great one now describ'd."

"Seminal root" – Vascular system of seed

Pomes in time the parenchyma is to the vascular system of the root as the ~~whole~~ mould is to the root as a whole.

"That this Foramen is truly permeable even in old setting Beans, appears upon their being soak'd for some time in Water: For then taking them out, & crushing them a little, many small bubbles will alternately arise & break upon it."

p30 etc Calls the cotyledons "dissimular leaves," & observes that even when they appear above the ground & turn green they are nothing but the lobes which were present in the seed before it was sown

p. 32 "I at last found, that the

dissimilar Leaves of a young Plant, are nothing else but the Lobes or main Body of its Seed:"

He understood that in Garden Beans & Corn the cots never rose above the ground.

notices that in the Bean the plumule is "Coopered up between a pair of Surfoyls", ~~but where the Lobes rise~~ & mentions that we don't find this happening where the cotyledons rise above ground & so protect the plumule

p 35. Looks also on the cots as a place where "the greater & grosser part of the Sap may be by the way depurated --- and so the purest proceed into the yet tender young & delicate Plume, as its fittest Aliment."

p64 Seems to believe in an actual circulation of the sap.

Hooke seems to have used better glasses than Grew, & when Grew saw Hooke's results he studied some of his things again with a better microscope. He mentions that Hooke was able to see smaller pores in wood than he had been able to see — & when Grew got better glasses he was able to confirm Hooke's results

p 85 advantage of hollow structures

p135 — 9 VI

Spring Crocus. "Having no Empalement, & starting up so early out of the Mould, even before its Green Leaves, & that upon the first spring of the Spring; lest it should then be quite starved, 'tis born ~~saw~~ swathe'd up in a Double Blanket, and with a pair of Sheets upon its Back."

140 Some notion of ~~compound~~ flowers for he calls the stamens of a single flower the "seminal attire" & ~~the~~ disc florets of a compound flower the "floral attire." He ~~calls the~~ describes the parts, the five lobed "floret", the "sheath" united anthers, the "Blade" a style, its division into 2, & the "Powder of Globules", which however he wrongly describes as ~~being~~ having been enclosed between the two branches of the stigma.

10

Whereas a Bean with the two Lobes laid open somewhat wider than the Parts, without a Rupture, will well bear, for the better sight of that Part which lies between them."

Fig 19

Slice of a younger trunk of a burdock

Fig 1

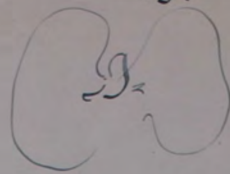
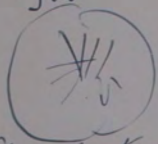
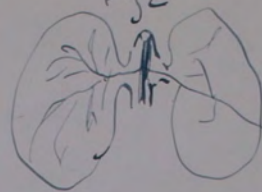


Fig 16



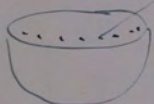
Slice of a trunk of burdock of divers years growth

Fig 2



seminal root.

Fig 3



extremities of branches of "seminal root" as they appear like so many small specks in the transverse cut

Lobe of a bean cut athwart

Green White lupine shewing navel fibres

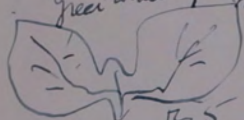


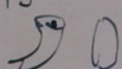
Fig 5

of the greater branches

the sub-divisions & inosculations of the lesser branches

Lobe of a Gourd Seed

Fig 4



The plume cut athwart

The Anatomy of Vegetables Begun 1672 First plate.

An Idea of a Phytological history Propounded. Together with a Continuation of the Anatomy of Vegetables; Particularly prosecuted upon Roots. And an Account of the Vegetation of Roots grounded chiefly thereupon.

by Nehemiah Grew M.D. & Fellow of the Royal Society.

1673.

The Epistle Dedicatory (To the Right Honourable William Lord Viscount Brouncker The President, And to the rest of the Fellows of the Royal Society.)

"Withal, I looked upon Nature as a Treasure so infinitely full, that as all men together cannot exhaust it; so no man, but may find out somewhat therein, if he be resolved to try."

"for how unpromising soever the Stock may be, yet the Fruit cannot but be somewhat matured upon which You are pleas'd to shine."

Preface

Grew mentions how Malpighi's paper was presented to the R.S. immediately after his, & mentions that as regards the Air-vessels, "the manner of their Spiral Conformation (not observable but by a Microscope) I first learned from Him, who hath given a very elegant Description of them."

Preface:—

"The generation of Experiments being like that of Discourse, where one thing introduceth an hundred more which otherwise would never have been thought of." 4/12

"the investigation of the Nature of any other Secondary Causes, than such as are Material, cannot be so useful to one that is considering the Nature of a Disease, or Compounding or Applying a Remedy thereunto."

(Of this note on the Cosmologia. This material frame of mind has its advantages in a naturalist.')

P50 Discussing the different influences under which plants exist

"it may be considered, what influence it [the Sun] may have upon the Plant it self, upon the Soil, or upon the Air. Whether that influence is any thing else besides heat, & may differ from that of a fire otherwise than by being temperate & more equal. Although it will be found very difficult here to make any sure Experiments. x x x I will only say thus much at present, That I do not understand why the Sun should not have some influence upon ~~bodies~~ bodies by heat, if it may be granted that the Moon hath, for which it would seem there are some good arguments.

13 6

& so sucking up the Sap again - Hereunto may be added the testimony of sight; the very Vessels themselves, in many Roots, coming under an apparent view," ~~standing in the~~

p 65

~~Compare~~

"the Parenchyma of the Bark is much the same thing, as to conformation which the froth of Beer or Eggs is as a fluid, or a piece of fine Manchet as a fixed body."

pp. 66 The ~~bubbles~~ "Bubles" are "the Receptacles of Liquor; which is ever of a limpid colour."

p 88
Spiral vessels - "The process of their operation is not, so far as I have observed, accidental, but constantly the same; scil. in the Root by South from West to East; but in the Trunck contrarily, by South from East to the West."

p 102 Explains that God is now resting from the work of creation, ~~& tha~~ that he now allows natural causes to produce their effects. "As the Wisdom of the King is not seen by his interposing himself

himself in every Case; but in the
Contrivance of his Laws, & constitution of his
Ministers in such sort, that it shall be as
effectually determined of, as if he did so indeed. Thus
all things are as Ministers in the hands of God,
conspiring together a thousand ways towards a
thousand effects & ends at one time; and that with
the same certainty as if he did propose that
omnipotent Fiat which he used at the
Creation of the World, to every one of them."

p106 Thinks that the bark of the root sucks
up the watery parts of the soil like a
purge, & being drained through the skin
of the root which is of different tenderness

p130 etc Grew has the idea that the air-vessels
tend to draw the plant upwards, & the strong roots
to pull it downwards. e.g. he says the upper part
of the roots of most seedlings ascend, because the first
leaves being large & standing in the free air "the
Air-vessels in them have a dominion over
the young Root, & so yielding themselves &
the sollicitation of the Air upward, draw
the Root in part after them."

An Idea of a Phytological History Propounded. 1673

Tab 4

Fig 1. A slice of a smaller Root of a Dandelyon cut transversly

D.T.G. The position of the succiferous or milk-vessels amongst the smaller Bubbles, in Chord-Rings; the Chords being of different lengths in the same Ring.

From G.G. inward stand the air-vessels.

G.T. G.T. The Bubbles streaming in Rays cross three or four of the black Rings; in which space other succiferous vessels, Scil. Lymphaeducts seem to be mixed with the Lacteal.

P 52.

"For what we obtain of Nature, we must not do it by commanding, but by courting of her."

The Comparative Anatomy of Roots presented

P 53

All bulbous Roots are as it were Hermaphrodites, a Root & Trunk both together: for the strings only are absolutely Roots."

p 63 "Further, the Root being cut-transverse, if near the cut-end you very gently press the side of the Root with the edge of your nail, the sap will thereupon issue sometimes from the skin; in the same manner, as from any other part of the Root where the like vessels are posited. And although the sap may likewise be expressed from the pith & other parts where sometimes there are none of these Vessels; yet not without a solution of their continuity; which here doth not follow, as appears from the disappearing of the sap, together with the intermission of the pressure, the said Vessels then dilating themselves by a motion of restitution,

E

Grew, Nehemiah 1641–1712.

Dict. of Nat. Biog. ed. by Leslie Stephen & Sidney Lee Vol XXIII 1890 p166.

Son of Rev. Obadiah Grew at that time master of Atherstone Grammar School, baptised at Parish Church of Mancetter (Warwicks). B.A. 1661 at Pemb. Hall Camb. Half brother of Henry Sampson. He tells us he was led to the study of vegetable anatomy as early as 1664 (aetat 23) He was encouraged in the study by Henry Sampson who was 9 years older. In 1670 Grew put an essay into Sampson's hands, which he showed to Henry Oldenburg, sec to the R.S., who in turn showed it to Bishop Wilkins, who was at the R.S. It was approved & ordered to be printed on May 11, 1671: the author was elected a fellow of the Society on 30 Nov 1671. Grew graduated M.D. of Leyden in July of same year, — aged 30. Grew seems to have commenced practice at Coventry, but to have been soon invited to London, the correspondence on this subject being also preserved by the R.S.

The preliminary essay, 'The Anatomy of Vegetables begun'. — publ. 1672

18

Papers read to Society Jan 8 & 15 1672 appeared with 2 the title "An idea of a Phytological History ... Roots &c (8vo 1673. Folio 1682)

18th April 1672, on the proposal of Bishop Wilkins, made curator to the society for the Anatomy of Plants.

1675. The Comparative Anatomy of Trunks, with an Account of their Vegetation grounded thereupon. The author's corrected copy of this work is # in the Library of the Brit. Mus.

In 1675 G. published the first of a series of chemical papers. He produced seven such essays, which are reprinted at the end of the 1682 edition of the Anatomy of plants, with continuous pagination, but not in the order in which they were read.

Though not published until 1682, 'The Anatomy of Leaves, Flowers, & Fruits' was read to the Society on 26 Oct & 9 Nov 1676 & 1677, & the figures illustrating the Anatomy of Seeds were also exhibited in the latter year.

1676 – 1681 he made a series of communi^ns

to the Society on the Comparative Anatomy of Stomachs & guts.

1677 on death of Oldenburg Grew became sec to the R.S.

Admitted an honorary fellow of the College of Physicians in 1680, so we suppose he was professionally incapable.

1681, Museum Regalis Societatis, or a Catalogue & Description of the Natural & Artificial Rarities xxx preserved at Gresham College.

1682. Magnum Opus 'The Anatomy of Plants'. Of the four books of this work the first, second & third are second editions of 'The Anatomy Begun' ('The Anatomy of Roots') & the 'Anatomy of Trunks' respectively. The fourth book is dedicated to Boyle & includes 'Anatomy of Leaves, Flowers, Fruits & Seeds'

"Although it is commonly attributed, on the ground of a modest remark of Grew's, to Sir Thomas Millington, it is probable that to Grew himself belongs the credit of first observing the true existence of sex in plants."

20 4

Publish a pamphlet on the method of making sea water fresh, & another on the nature of the salts present in the then popular Epsom Wells.

Grew's last work was published in 1701. Its title is Cosmologia Sacra or a discourse of the Universe, as it is the Creature & Kingdom of God. This contains a portrait by R White (eng? by same man) after a painting by the same artist formerly in Barber-Surgeons Hall.

A copy of this is in the British Museum, the few few pages of which are crowded with ms notes by Coleridge.

Grew died suddenly in March 25 1712 as he was going his rounds. Buried at Cheshunt Parish Church in the Dodson family vault, he having married Elizabeth Dodson.

At least 1 son & 2 daughters

A portrait published by Dr. Thornton exists, as well as the one mentioned.

Linnaeus dedicated Grewia in Tiliaceae to him

Refs
Enoch's Translation by the Rev John
Shaver 1712
Notes by Sir J. E. Smith in Rees's Cyclopaedia.
Munk's Coll. of Phys i. 406 †
Information supplied by Miss Elizabeth Drew.
article signed G. S. B.
G. S. Boulger

Dict Nat Biog V XXIII p 168. 22 6

Grew, Obadiah D.D. 1607–1689.

ejected minister. Third son of Francis Grew who married Elizabeth Denison in 1598

Francis Grew was a layman, originally of good estate but 'crush'd' by prosecutions for nonconformity in the high commission court + Star ~~Cham~~ Chamber.

Obadiah was at Balliol + became master of Atherstone grammar school. At the outbreak of the Civil War he sided with the parliamentary party – ~~He is seen~~ When Cromwell passed thro Coventry in 1648 he is said to have pleaded with him for the King's life. He later on he sent him a strong reminder. He welcomed the Restoration. He resigned his living in 1662 being unable to comply with the Uniformity Act.

In 1682 Grew was convicted for breach of the five mile Act + imprisoned for 6 months in Coventry Gaol. While in prison later he every week dictated a sermon to an amanuensis, who read it to four or five

Short hand writers, each of them got several copies made; it was thus available for simultaneous use in 20 clandestine meetings. On 8 Jan 1665 ~~No portrait of him is k~~ nearly 200 persons were imprisoned at Coventry for frequenting these conventicles. James' declaration for Liberty of Conscience (1687) restored Grew to his congregation, to whom he ministered for another two years.

No portrait of him is known but there is a rare engraving of his wife née Helen Vicars. 1603–1687 daughter of Gregory Vicars of Tressell [?] – widow of William Sampson & [illegible] [illegible] mother of Henry Sampson

She was widow of William Sampson, Mother of Henry Sampson M.D. Nehemiah was his only son.

Grew's elder brother Jonathan had a son also Jonathan, educated at Pembroke Hall. He also would not conform [illegible] in 1662 Bishop Hackett offered him a rectory & the position of Prebend at Lichfield.

24

Sampson, Henry (1625?–1700)
Dict Nat Biog. Vol L. 1897 p 230
gives ref to Funeral Sermon by Howe
with an account of Sampson by his half-brother
Nehemiah Grew.

Enoch's Translation.
A Funeral Sermon
Upon the Sudden Death
of
Dr. Nehemiah Grew,
Fellow of the College of Physicians.
Who died March 25th, 1712
Preach'd at Old-Jewry.
by John Shower
Printed by J. R. for John Clark, at the Bible & Crown in the Old Change; & may also be had of Eb. Seadgel, at the Tea-Canister in Bartholomew-Close. 1712
Price 2d.

---

p12 "When his Summons came, he was not found idle, but doing his Master's Will, in his proper Place & Business, while he visited the Sick committed to his Care."

p13 "It was his ~~[illegible]~~ Honour & Happiness, to be serviceable to the last Moments of Life."

Shower quotes ~~of~~ the following account of

P. 14 Obadeah Grew from Baxter's Life
"He was a Calm, Grave, & Sedate Person,
a Godly, able & Faithful Minister."

p. 16 "Ezra (Ezekiel & Nehemiah)
"For in him Two Things were united,
which some think are seldom found together;
a diligent Inspection into Nature and
Philosophy, with a great Veneration for
God & Religion, & a constant Study of
the Holy Scriptures"

"He was Grave & Serious in his Conversation,
yet Affable & Courteous.

p 20 "He valu'd the Substantials of
pure Christianity, wherein All agree,
more than laying a mighty stress on Lesser
Matters of Humane Addition &
Imposition."

Nehemiah Grew

Sachs History of Botany. Oxford 1890

Question of the priority of Malpighi or Grew.

p 231 Both M. + G. laid their results before the Royal Society almost simultaneously.

On Dec 7. 1671 Malpighi laid his work before the R.S. On the same day Grew presents his treatise (The Anatomy of plantes begun" in print having already tendered it in mss on May 11 of the same year. But these are not the dates of the larger work of the two men, — only the preliminary communs.

Malpighis larger accounwes laid before the Society in 1674, while Grew produced a series of essays between 1672. 1682. These appeared together with his first comm.ns in a large folio vol under the title "The Anatomie of plantes" in 1682. Thus Grew had the opportunity to use Malpighi's ideas in his later compositions, + he actualy did quote from him. This removes the serious imputation which Schleiden made against Grew in the Grundzüge 1845. I. p 207

// p 240 Early work " An idea of a philosophical history of Plants." R.S. 1672

p 244 The works of Malpighi + Grew were not followed for by the next 120 yrs by any work of equal rank with them

p 382 In the first work 1671 p 38-39 Grew ascribed no sexual significance to the stamens, but in the Anatomy of Plants (1682) Ch 5 sec 3 p 171 he explains that he was led by Sir Thomas Millington to believe in the true nature of the stamens.

His ideas were still however confused, for he did not understand about the Compositae.

p 384 The conjecture of Grew & Millington was mingled with strange chemical theories & analogies from animal life - It was Camerarius who really first established the sexuality of plants.

Cosmologia Sacra: or a Discourse of the Universe as it is the Creature & Kingdom of God. Chiefly Written, to Demonstrate the Truth and Excellency of the Bible; which contains the Laws of his Kingdom in this Lower World.

In Five Books.

by Dr. Nehemiah Grew

Fellow of the Colleg of Physicians, & of the Royal Society. 1671

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p17. "In the Woody Parts of Plants, which are their Bones; the principles are so compounded, as to make them Flexible without Joynts, & also Elastick. That so their Roots may yield to Stones, & their Trunks to the Wind, or other force, with a power of Restitution. Whereas the Bones of Animals, being joynted, are made Inflexible."

p 38. Proportion the basis of all beauty, whether of form colour or sound.

Coleridge in his ms notes says "It is from admiration of Dr. N. Grew, & my high estimate of his Powers, that I am almost tempted to say, that the Reasonings in Chapt. III. ought to have led him to the perception of the essential phaenomenality of Matter." x x x

I Royal Society.
Correspondence between Nehemiah Grew & the Sec of the R.S. (Oldenburg) inviting him to give up practice in Coventry & come to London (cf handwriting with photo of B.M. page)

II British Museum
Rare engraving of Grew's mother, Mrs Obadiah Grew formerly Mrs William Sampson, née Helen Vicars.

III Baxter's life of Nehemiah Grew

IV Newton
Baxter's initials. Dict. Nat Biog. VI
XXIII p 168
Robert Hooke's life

V B.M.
M.J. Schleiden. Grundzügen der Wissenschaftlichen Botanik. 3 aufl. 1844. T. I. p 215.

VI Manchet. Murray's Engl Dict
v. Newton

VII James make print from negative already [illegible]
Photo. lantern slide from the 1682 book

VIII Anatomy of Vegetable Begun.
Descr. of fern plate

Shamrock. Anatomy of the Properties of Vegetable

Grew's Cosmologia sacra is a lengthy
folio ^explaining his philosophy & defending religion & especially Christianity,
& explaining his views on the nature of the
world. There is a copy in the Br.
Museum of this. The calyx [illegible] is
crowded with [illegible] [illegible] [illegible]
S. T. C. M. [illegible] is chair of [illegible]
feeling of its [illegible] [illegible] [illegible]
notes [illegible] in several places [illegible] The argument [illegible]
[illegible] [illegible] in full! [illegible] & [illegible] Church
~~the [illegible]~~ book itself [illegible] of one has not
[illegible] [illegible] [illegible] [illegible]
been [illegible] [illegible] [illegible] time [illegible] Church
[illegible] is [illegible] [illegible] Grew as exactly the
[illegible] [illegible] from [illegible] [illegible] man who
[illegible] at [illegible] [illegible] is [illegible] to
[illegible] [illegible] [illegible] [illegible] is
[illegible] [illegible] [illegible] naturalist.

The Anatomy of Plants. With an (1
idea of a Philosophical History of Plants. 33
And several other Lectures, read before the
Royal Society. By Nehemiah Grew M.D.
Fellow of the Royal Society, of the
College of Physicians
Printed by W. Rawlins, for the Author, 1682

Epistle dedicatory. (to Charles II)
"One who walks about with the meanest
Stick, holds a Piece of Natures Handicraft,
which far surpasses the most elaborate
Woof or Needle-Work in the World".

Preface
Speaks of Henry Sampson as his Brother-in-law.
Mentions that S. encouraged him in the idea of
embarking on plant anatomy
Malpighi's first communic. to the R.S.
in 1671 was without figures

End of preface

"In the Plates, for the clearer conception of the Part described, I have represented it, generally, as entire, ... So, for instance, not the Barque, Wood, or Pith of a Root or Tree, by it self; but at least some portion of all three together: Whereby, both their Texture, and their Relation one to another, & the Fabricke of the whole, may be observed at one View."

p 81 Early ecological idea!

"The proper Places also of Plants, as well wherein they Love, from their Seeds, or other way of Propagation, as Spontaneous growth, should be considered, and that as to Climate; whether in one Colder, Temperate, or more Hot. The Region; Continent or Island. The Seat: as Sea, or Land, Watry, Boggy, or Dry; Hills, Plains, or Vallies; Open, in Woods, or under Hedges; Against Walls, rooted in them, or on their Tops: & the like."

Ng.

p171. Seeds are mucilaginous testas. Pulteney suggests 7 [illegible] 35

Clary seed into the eye may be due to this.

Orval Sage

36

the "Rowl" e.g. Bears-ears, the double rowl which may be either a "Fore-Rowl" or "Back Rowl"

Protection of buds - by bracts etc.

p(2) In young leaves "The Hairs being then in form of a Down, always very thick set, they give that protection to the Leaves, which their exceeding tenderness then requires; so that they seem to be vested with a Coat of Frieze, or to be kept warm, like young & dainty Chickens, in Wooll."

37/5

The Anatomy of Vegetables Begun.
end of Chap V p 148

"what may be the primary & private use of the attire (for even this abovesaid, though great, yet is but secondary) I now determine not."

(the abovesaid is the use to insects as "their Lodging & their Dining-Room.")

He points out on p 146 that - of the use of the "semets" (anthers) is for Ornament, "we may ask, If for that merely these were meant, then why should they be so made as to break open, or to contain anything within them? Since their Beauty would be as good as if they were not hollow, & is better before they crack & burst open, than afterwards." Goes on to show how the attire provides food.

Grew seems to get away a little from the anthropomorphic conception of the world.
He seems to think that the "Outward Elegancies of Plants" may be for the purpose of giving man pleasure, but as the "Inward Ones," which (generally) are as Precious & Various as the 'Outward', are so seldom seen their purpose can hardly be for this, but must be for the benefit of the plants themselves; "For the Corn might grow, &c; & the Flower, &c, whether or no Men had ~~[illegible]~~ a mind, leisure, or ability, to understand how."

= p12.
Suggests that yellow flowers are chiefly found in plants flowering in spring, — white flowers in water plants

much interested in the smells & tastes of plants

Returning to the 1682 edition

p171

In the Anatomy of Flowers, Grew points out that the Primary & chief use of the attire must be important because plants which have none of the outer floral parts yet have the attire.

"In discourse hereof with our Learned Savilian Professor Sir Thomas Millington, he told me, he conceived, That the Attire doth serve, as the Male, for the Generation of the Seed.

I immediately reply'd, That I was of the same Opinion; & gave him some reasons for it, & answered some Objections, which might oppose them."

p172 Curious mystical ideas about the attire carrying off the volatile saline sulphur etc

40

4

p.22 Suggests that the exp.t should be tried of growing plants in Common water, other water, milk, oil, ink etc, or in any of these with solid bodies such as nitre, or salt dissolved in them. The effect upon the plants & on the liquid should be noted. The solid body should be weighed before solution, & then after the exp.t is over the liquid should be evaporated & the solid again weighed.

p.22 Mystical idea about the "principles" of things

"The flourishings also of Frozen Dew; & the Green Colour, which the Aer gives the Ground or Water, when, for some time exposed to it; & other effects; seem to argue, that it is Impregnated with Vegetable Principles".

is now practically no doubt that Grew was an ~~Enough~~ independent worker, + was only definitely indebted to Malpighi in so far as he himself acknowledges it - In the preface to his second treatise, for instance, he mentions the Italian botanist, + remarks in speaking of the "Air-vessels", — "The manner of their spiral Conformation (not discernable but by a Microscope) I first learned from Him, who hath given a very elegant description of them." If Grew had been a wholesale plunderer from Malpighi's writings, he would hardly have been likely to frankly acknowledge indebtedness on a special point! It must be confessed, however, that judging by present day standards of scientific etiquette, Grew should have referred more fully to the writings of the Italian authors, in the final edition of his "Anatomy of Plants". The Anatomy of Vegetables Begun contains more that is of interest from a morphological than from a strictly anatomical standpoint, according to the modern sense of the terms. It is rather regrettable that the meaning of the word anatomy has been restricted since Grew's time, until it is now often used to denote microscopic detail alone. Grew devotes a good deal of space

1. Marcelli Malpighi Anatome Plantarum. 2pts. London 1675 + 1679

Marcellus Malpighi. Die Anatomie der Pflanzen. I und II Theil. London 1675 und 1679. Bearbeitet von M. Möbius. Leipzig. 1901

Notes:-
Born 1628. Became a Doctor

Adalbert von Hanstein. Ueber die Begründung der Pflanzenanatomie durch Nehemiah Grew und Marcello Malpighi
Bonn 1880

not in B.M.

Translates the most important parts of Malpighi reproduces a number of the figures

43

Pollender, A. (1868) Wem gebührt die Priorität in der Anatomie der Pflanzen dem Grew oder dem Malpighi. 41 Versamml. deutsch. Naturforsch. und Ärzte, Frankfurt am Main, Sept. 1867. Bonn 1868

p13 Malpighi the first to describe stomata "orifices" Rengrias [?] function of anthers which Malpighi does not do.

43

to tell him that at the moment that he received his work Grew's work already printed, reached the Society

Pollender points out that Malpighi's work on the germination of seeds was later than Grew's on the same topic

"Dass Malpighi aber eben so unabhängig wie Grew, von einander gearbeitet und seine Forschungen angestellt, ist daraus klar, wie es auch schon Curt Sprengel angibt, das er überall seinen eigenen Gang geht und vieles besser und genauer darstellt als Grew, in vielen Stücken aber weit geringere Einsicht und mehr Vorurtheil verräth."

Musæum Regalis Societatis
or a
Catalogue & Description
of the Natural & Artificial
Rarities Belonging to the Royal Society
and preserved at Gresham College
Made By Nehemiah Grew. M.D.
Fellow of the Royal Society, & of the
College of Physicians.
Wherunto is subjoyned the
Comparative Anatomy of Stomachs & Guts
by the same Author.

London,
Printed by W. Rawlins, for the
Author, 1681.

Large cat. dedicated to Daniel Colwall
founder of the Museum of the Royal
Society, explains that this is done
in order that the Society "might always
wear this Catalogue, as the Miniature
of your Abundant Respects, near
their Hearts."

Preface Museum 7th R. Soc 2 45

"I like not the reason which Aldrovandus gives for his beginning the history of Quadrupeds with the Horse; Quòd præcipuam nobis utilitatem præbeat. Being better placed according to the degrees of their Approximation, to Humane Shape, & one to another: and so other Things, according to their Nature. Much less should I choose, with Gesner, to go by the Alphabet. The very Scale of the Creatures, is a matter of high speculation."

"After the Description; instead of medling with Mystick, Mythologick, or Hieroglyphick matters; or relating stories of Men who were great Riders, or Women that were bold & feared not Hass; as some others have done: I thought it much more proper, To remarque some of the Uses & Reasons of Things."

"I have made the Quotations, not to prove things well known, to be true; ..... as if Aristotle, must be brought to prove a Man hath ten Toes."

p 254 346

Grew seems to believe that salts obtained from a plant have a tendency to crystallise out into a form resembling that plant, says "And though I have not seen it myself, yet I have been told by one (c) that doth not use to [illegible] things, that the Volatile Salt of Vipers, will figure it self into the semblance of ~~little~~ Vipers.

(C) Sir Thomas Millington.

(it self my self written separately)

Anatomy of Plants Book I p 3

"This Plume is not, like the Radicle, an entire Body, but divided, at its loose end, into divers pieces, all very closely couched together, as Feathers in a Bunch; for which reason it may be called the Plume. They are so close, that only two or three of the outmost are at first seen: but upon a nice & curious separation of these, the more interiour may still be discovered."

47

The Comparative Anatomy of Trunks
1675.

~~Both~~ Copy much corrected in MS., which definitely appears to be the author's, though not signed. Some of the corrections seem to be those which are found in the 1682 edition, tho' ~~many~~ ~~most~~ of them do not agree with this.

The frontplate has written above it Interleav'd. vide ye Book (leaved)

Air vessels are of passing [illegible] transformed on caterpillars to Flys (the whole passage very much rewritten in the second edition, but this analogy introduced)

Photo titlepage – p 30

an artificial Ribband or altered Ribband or a piece of common tape

Wem gebührt die Priorität in der Anatomie der Pflanzen dem Grew oder dem Malpighi

Aloys Pollender

Bonn 1868

mt. p43

Schleiden in his Grundzügen der Wissenschaftlichen Botanik 3 Aufl. 1844 T. 1 p 215 states that Malpighi had sent ~~his~~ great work 'Anatome Plantarum' in 1670 to the R.S. while Grew was later, — only having ~~[illegible]~~ Grew was printed in 1682. Also that Grew was at that time Secretary of the R.S. & did all he could to hinder the publication & recognition of Malpighi's work.

From the actual correspondence of Malpighi Pollender finds that he sent his work to Oldenburg (who, & not Grew was sec. of R.S. on Nov 1. 1671, & this was the first work he sent them. Oldenburg wrote to Malpighi

17th Century books seen at Society of Apothecaries Library. March 24. 1915. 48
shown me by Dr W. Bramley Taylor.

Axtius (J. C.) Tractatus de Arboribus coniferis 1679

Boccone, (P.) Museo di piante rare Venetia 1697

Breynius, (J.) Icones exoticarum. Gedani 1678
& other works.

Eusebius, (J. N.) Historia naturae Antwerp 1635
(Partly plant — partly animal with figures)

Hernandez, F. Plantarum ... Mexicanorum Historia. 1651 folio. wood cuts.

Horst, J. Herbarium Horstianum. 1630

Loeselius, J. Flora Prussica. 1703.
" " Italica.

…cobi Breynii Gedanensis Exoticarum
…umque minus cognitarum Plantarum
…enturia prima, cum figuris æneis
… Gedani … Imprimebat
…d - Fridericus Rhetius 1678.
…d. of plates found : with in)

= Jacobi Breynii, Gedanensis,
Prodromus fasciculi rariorum Plantarum
secundus, Exhibens Catalogum
Plantarum rariorum, Anno ~~M. DC.~~ L
1680 in Hortis Celeberrimis
Hollandiae observatarum … Gedani
… Imprimebat Fridericus Rhetius -
1689 (Latin. no ill)

= Prodromus Fasciculi rariorum
Plantarum, Anno MDCLXXIX
in Hortis Celeberrimis Hollandiae.
… Jacobo Breynio Gedanensi.
… Gedani … Imprimebat - David
Fridericus Rhetius. 1680.
unill

Arctius.

Tractatus de Arboribus coniferis et
pice conficienda … Johannis
Conradi Arctii … Jena Apud
Joh. Bielcken 1679.

unill. ~~Duod.~~) (3 x 5 ½ in)
~~16mo (small.)~~

D. 1/22.

=

Museo di piante rare della
Sicilia, Malta, Corsica, Italia,
Piemonte, e Germania … di Don
Paulo Boccone … ed al presente
Don Silvio Boccone … In Venetia,
1597

very good copper plates.
portrait of Boccone

Society Apothecaries Library Mar 24 1915 80

Herbarum Horstianum seu
de selectis plantis et radicibus
libri duo ... per Gregor. Horstium
... Marpurgi, ... 1630
(Includ. unill.

= Flora Prussica, sive Plantae
in Regno Prussiae sponte nascentes,
... Johannes Loeselius ... Regiomonti 1703

J. B. van Helmont

see Larbre p455

Johann Baptist van Helmont. Born 1577 at Brussels. A nobleman of Brabant. d. 1644

Published little during his life but after his death his son published:—

Ortus medicinae vel opera et opuscula omnia. 1648

of which French, English & German translations appeared.

Thought that all vegetables were formed from water.

Earth weighing 200 lbs in a pot; a willow branch 5 lbs in weight planted in it: pot covered with a lid to keep dust off: after 5 years the exp. concluded. The willow weighed 164 lbs, but the earth in the pot had lost only 2 ounces.

A long account (from which above is taken) in Kopp, Hermann. Geschichte der Chemie Bd I. Brunswick. 1843 pp 116—127.

Ortus medicinæ. id est, initia physicæ inaudita. Progressus medicinæ novus, in morborum ultionem, ad vitam longam. authore Joanne Baptista van Helmont. Toparchâ in Merode, Royenborch, Oorschot, Pellines, etc. Edente Authoris Filio, Francisco Mercurio van Helmont. Cum ejus Præfatione ex Belgico translatâ. Amsterodami, Apud Ludovicum Elzevirium, 1648.

Univ. Lib. (~~41. 16. 26~~) K. 16.26.1.

The willow & ~~tub~~ pot expt. is described on p 109 in the chapter called "Complexionum atque mistionum elementalium figmentum."

[See Singer. Hist. of Science p 171; this experiment was predated by Nicolas of Cusa
AA. Aug 1941]

K. 9. 49
K. 13. 28

see X1. 2. 40 3.
X1. 2. 40

Title page of English edition. 54 / A

Quatuke or, Physick Refined. The common
Errors therein Refuted, And the whole Art Reformed
& Rectified: being A New Rise & Progress of
Physiosophy & Medicine, for the Destruction of
Diseases & Prolongation of life.
Written By that most Learned, Famous, Profound,
& Acute Physiosopher, & Chymical Physician, John
Baptista Van Helmont, Sparch a Sovereign, in
Brocede, Royenborch, Oorschot, Pettines, etc.
And now faithfully rendred into English, in tendency
to a common good, the increase of true Science; By
J. C. Sometime of M. H. Oxon. ...
London, Printed for Lodowick Loyd, & are to be sold
at his Shop next the Castle in Cornhill. 1662

The dedication "to the English Reader" speaks of Helmont's works applying to those: "that can value the Wisdom found in the true knowledge of Nature & Art", ... "their fill of essential (not formal) Learning; of experimental (not ~~histo~~ historical) Knowledge":

... "Wouldst thou then find a clear efflux of pure (not flashy) ~~In~~ Ingenuity? here it is. Wouldst thou behold acute Invention, in its unmixt clarity? here it is. Wouldst thou contemplate the depth of exact & solid Judgement? here it is. Wouldst thou be acquainted with Argument Impregnable, to the production of Truth, & conviction of Error? here they are. Wouldst thou understand the vanity of evolving unwieldy (sic) Volumns (sic) of Vegetables": ... "In a word, wouldst thou not dwell in the Circumference of Knowledge, but dive into the very Center it self? here then employ thy Faculties, here exercise thy Abilities, here impend thy Studies."

The writer says "Thou wilt then moreover find ... his Disputes subtile, grave, & of great validity: his Assertions sound, his Demonstrations clear, & his Conclusions infallible.

(This is written by H. Blunden Med. Licentiat.

The author dedicats his book to the Almighty

"To The Unutterable Ward, the Author Offers up a Sacrifice in his Mother Tongue"

"being overwhelmed in the Abyss of my own nothingness; I pray thee, O true All-providing God, that true wouldest clementiously accept of this Book"

The Translators Premonition to the candid Reader.

"neither was it translated into our Mother Tongue to any other end, than that naked & simple Uniformity might appear, to the confounding of that which appears the Truth but is not"

The Star" the Wise men of the East saw, & by its direction came & Worship the Child, lays down all their wisdom at his Feet; for a lively token, that all true Wisdom & Science was to be received from him, in whom all the treasures of Wisdom & knowledge dwell; & not by the dim & dark illustrations of mans own Reason & Discourse"

57

4

"And as for the manner of rendring the sense of the Author, I have been careful & faithful according to my ability, to make him as plain to be understood by my Country-men as the Work would even possibly bear; therefore I have not studied for abstruse word, or high flown language; For Veritatis simplex oratio; the speech of Truth is simple & plain; ... It is not Words but things, not Names but Natures, not Resemblances but Realities, not Sublimities but Simplicities, that the Sons of Truth do seek after"

— Francis Mercurius Van Helmont, — the son of the writer prefaces a ~~b~~ very gossipy preface all labour - his own words. The only fair in it is: —

J. B. van Helmont - d. 1644

(The main phrase of the book, actuately written by J.B. van Helmont)

(1) ~~The Author's Promises~~

Points out that in his view Diseases do not arise from "the co-mingling, fight, contrariety, or unequal tempering of the Elements", nor are they of the alluted of the "Qualities," the "Complexions" or the "humours".

"blood-letting never helps, unless it be by accident."

p3

"Hence the Cup of sloath hath tainted the Schooles with drowsiness, every one being more willing to assent, than to search carefully."

"wholethingliness or Essence"

Speaks of Galen "distinguishing the virtues of simples; word for word out of Dioscorides"

(very definitely Christian)

p6

"moreover, I neither require the Reader to be courteous, nor do I fear the scoffer."

p 7
Took his degree in medicine at 'Lovaine'

"in the year 1609, being now married, I withdrew myself from the common people to Vilvord, that, being the less troubled, I might proceed diligently to view the Kingdoms of Vegetables, Animals, & Minerals."

"I searched into the Books of Paracelsus, filled in all parts with a mocking obscurity or difficulty for I admired that man, & too much honoured him: till at length, understanding was given, of his Works, & Errours

p 11 His father died in 1580. Finished his course of Philosophy in 1594.

"I was now admitted to Examinations; but in a Gown, & marked with a Hood, as though the Garment did promise Learning; I began to know that Professors ... did expose young men that were of late then degrees in Arts, to a mock: I did admire at the certain kinde of dotage in Professors..."

p 12
"Therefore having finished my Course, when as I knew nothing that was found, nothing that was true, I refused the Title of Master of Arts; being unwilling that Professors should play the fool with me, that they should declare me a Master of the Seven Arts, who was not yet a Scholar. Therefore

seeking truth — knowledge, but not their appearance, withdrew my self from the Schooles."

At Lovaine he listened to various lectures including "Magick" but "in length, instead of a Harvest, I gathered onely empty stubbles, & most poor patcheries, void of judgement."

p13

"When I was tired, & wearied with the too much reading of other things, for recreation sake, I rouled over Mattheolus & Diascorides, thinking with my self, nothing to be equally necessary for mortal men, as by admiring the grace of God in Vegetables, to minister to their proper necessities, & to crop the fruit of the same.

Straightway after, I certainly found, the art of Herbarisme to have nothing increased since the dayes of Diascorides."

He pours scorn upon the "temperature" & "degrees of Elementary qualities" attributed to the herbs, & found in practice that became destinct, were valueless

"I was inclined with a singular greedines, unto the most pleasing knowledge of natural things; & even as the Soul became Servant to its own inclinations, I unsensually slid, altogether into the knowledge of natural things."

p13 ¶4

"I had gotten from a Merchant, all
simples, than I myself keep a little of my own in my
possession, rather from a Clark of the Shops, or a
Collector of ~~them~~ simples, I had all the usual
Plants of our Country: so I learned the knowledge
of many by the books of the ~~same~~ same. And also I
narrowly weighed with my self, that indeed I
knew the face of Simples, & their names: but,
than their properties, nothing lesse"

He refuses to admit the preeminence of reason

"the knowledge of good & evil, obtained by eating the
Apple, was Reason it self, that is to
greatly adored by moderne men.

Reason: the "Household Seruant" of the mind

p18

And I learned more & more, that Reason was
far off from, & moreover also, one of the lights
of truth, because the Bats, it only cannot
endure a beam the light, being content with it
own borrowed glow-worm light."

p34
"Therefore let the Schooles know, that the Rules of the Mathematicks, a Learning by demonstration, do ill square to Nature. For man doth not measure Nature; but she him."

= Condemns the "ignorant natural ~~ph~~ Philosophy of Aristotle & Galen"

p55. Regards the earth as egg shaped, ~~the~~ long axis from N to S.

Chapter XVIII

"The Fiction of Elementary Complexions & Mixtures"

p105

"But I have learned by this handicraft-operation, that all Vegetables do immediately, & materially, proceed out of the Element of water onely. For I took an Earthen Vessel, in which I put 200 pounds of Earth that had been dried in a Furnace, which I moystened with Rain-water, & I implanted therein the Trunk or Stem of a Willow Tree, weighing five pounds; & at length, five years being finished, the Tree sprung from thence, did weigh 169 pounds, & about three ounces: But I moystened the Earthen Vessel with Rain-water, or distilled water (alwayes when there was need) & it was large, & implanted into the

Earth, & least (sic) the dust that flew about 10
should be co-mingled with the Earth, I covered
the lip or mouth of the Vessel, with an Iron-Plate
covered with Tin, & easily passable with many
holes. I computed not the weight of the leaves that
fell Vpon the four Autumnes. At length, I again
dried the Earth of the Vessel, & then were found the
same 200 pounds, wanting about two ounces. Therefore
164 pounds of Wood, Barkes, & Roots, arose out of
water onely.

p124

"For truly, I have distinguished of inclinations: to wit,
that one is that whereby any one doth naturally
incline unto Professions, Religions, Arts, Sciences,
Merchandise, or affaires of Exercise: This I name, an
inclination of ones Calling. x x x we believe by
faith, That God immediately creates mans minde,
& directs it to a certain Calling, (as now, in Christ
it may please it self most;) whose way, he reacheth
to its worthy Talents, 5. 2. a one onely Talent.
Therefore the inclination of Calling, whereby
any one is made a Physitian, a Geometrician,
a Musitian, etc. is given to the Soul by the
Creator himself, from whom every good gift cometh
from above: Therefore all inclinations of Calling,
for that very cause are good."

p125

"For truly the Soul is immortall, wholly simple, & uniform; & seeing it is immortall, it cannot have its inclination from the frail, & sliding motion of the Stars."

p146

Describes plants as "vitall Souls, but not proper living souls."

p188

"For without doubt, man was to dwell in the air, & be thorowly washed round about with the air."

p245

"Those Irish, who live by Trifoil or three-leaved grasse (which they call Ciambrock) instead of bread & water."

pp 280 & 281

Cure of hydrophobia

An old man who had been bitten by a mad dog "they let him down headlong into the Sea; & he was under the water about the space of a Miserere, then afterwards they thrice more plunged, about the space of an Angelical salutation. .... I did think that he was dead, but the Mariner derided my fear." He was cured

p 455

"For we must be hand-maides to Nature, but never command her"

p 603

It hath always seemed to me, that Idea's are stamped anew, by the act of the Imaginative Power, like a spark which is made anew by a co-rubbing of the Steel & Flint.

p 612

"for all particular Simples have their own Endowments, their Ideas, and do take away hurt-ful Idea's their compeers. To wit, Southern-wood, Sage, & Rue, do drive away the Idea's of Fear: Mugwort, the Nettle, Ballote, & black Goosebery do prevail in cases contracted from grief: Bull-Assa, Castoreum, the Elder berries, the Essence of the Agath or Jet, in cases caused from Anger." etc etc

p 1078

"Truly, I was a glutton of Books; I had collected all remarkable things into common places, so as that few exceeded me in diligence, but most in judgement. In the seventeenth year of my youth, I read lectures of Chyrurgery before the Students, in the Colledge of the Physitians of Lovain; ... Afterwards I desisted, having admired at

my own rashness & inconsiderateness,
than I should presume, only by the reading of
books, & learn those things, such are not well learned
but by sight, & the handling of the hand, by long
use, & a sharp judgement."

p 1078
Save up his inheritance

p 1065
"I have always, even from a Child, sought after
the truth, above every delightful thing."

68

Études sur J. B. van Helmont, by W. Rommelaire.

Mémoires des concours et des savants étrangers L'Acad. Roy. de Médicine de Belgique. T. 6. 1866 pp 287 — 552

p287 Born Brussels 1577. University Louvain

p290 ~~attracts~~ botany enthusiastically and was discouraged by finding that since Dioscorides the science had not progressed.

p306 a man of an ~~[illegible]~~ ardent & restless imagination. ~~[illegible]~~ [illegible]

p318 He was imprisoned by ecclesiastic ~~[illegible]~~ because of his treatise on animal magnetism. Malines for — he denied cases of miracles (p309) & that he denied cases ~~[illegible]~~ (Thaumaturgic) and ascribed cures obtained by relics ~~[illegible]~~ cures from faith etc.) all but this ~~the~~ only religious man.

His sons above him — by religious man.

p320 While he was imprisoned two of his sons died of the plague — p320-21 — as soon as he was set at liberty he devoted himself to succoring the plague-stricken.

p324, 325 He realized the necessity of shaking off the authority of Aristotle & Galen

1527

He was a follower of Descartes

As Descartes in Philosophy so Van Helmont
in Medicine, struck off the yoke of Aristotle &
the Medieval philosophers, & put upon them
submission to the authority of Tradition.

J. B. van Helmont, J. A. Mandon

Mémoires des Concours et des Savants étrangers, publiés par l'Acad. Roy de Méd. de Belgique T. 6. 1866 pp ~~555~~ 553 – 739

p 555

The greatest medical figure of modern times
Van Helmont – tortuous mind far as Descartes & Bacon is in the scientific revolution of his time.

P. 555 – 6

Disgusted by the university early at Louvain & refused the M.A. After terrible intellectual struggles & devouring great Latin authors he planned as he saw Arab modern repeats the same songs. At ~~last~~ all books last he decided to devote himself to medicine. He ~~handed~~ handed over his fortune to widowed sister & embarked in medical studies. He p 557 married a vain bourgeoise ... came this wife were all handed to the poor

p 560
A ~~fuming~~ burning imagination –

Short Miscellaneous Notes on 17th century botany. etc.

References etc from Jessen K F W
Botanik der Gegenwart und Vorzeit. Leipzig
1864 etc

— G. E. Guhrauer. Joachim Jungius und sein Zeitalter. Stuttgart und Tübingen 1850

— Look up the Phil Trans for 1665-5 and 7 century. (See Petiver 1699 N 255 p 289-294

— Kenelm Digby. 1605-1665. (See Phil Trans)

— Thomas Browne. The Garden of Cyrus or the Quincunx, Lozenge & Network Plantations of the Ancients. See an account of this in Pritz Deutsches Museum 1857 by Jessen K.F.W.

— Borelli, Peter. Observationum medicophysicarum centuria (Haag 165-6)

= Rigaud, ~~P.S.~~ S. P. Correspondence of Scientific Men of the Seventeenth Century. 2 vols. Oxford Press. Index can be got 1/-

= Two Oxford Physiologists. Richard Lower 1631-1691 John Mayow 1643-1679
4 to Scotch 1/- Oxford Press

I doubt if Bacon really ought to be considered as a philosopher. He aimed at the ~~discovery of principles~~ ~~& the interpretation of~~ nature & his inductive method
p xxv was simply a means to this end — not an end in itself. ~~Its many & various defects, but~~ His method may be defective, to be ~~A/m who uses a microscope~~ A biologist may arrive at important biological results without thoroughly understanding the optics of the microscope he uses — The optician's interest is in the microscope itself — the philosopher's interest was in the inductive method itself — to Bacon's interest was in things to be seen under the microscope.

By philosophy he means natural philosophy = science eg. p(11) "The New Philosophy or Active Science"

Uses the word experiment (p 33) in wrong sense — p 10 of my notes

~~p 36~~ His attacks on Aristotle as of purely historical interest — i.e. ignores Bacon's attacks on the deductive method — so are the attacks of the schoolmen to his championship of inductive method. Thus — whether Bacon is the founder of the inductive method is a matter of purely historical interest.

Democritus of p 45 see p 103, 145 of my notes

p 48 Nature ~~& the method~~ thus that
Broad says Bacon "good method" will reduce all human intellects to a level: see p 146 of my notes

p 8. Broad's essay "the new Art of Interpreting Nature" is from all human minds on a level

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Cuttings on Bacon

Grew box.

DR AGNES ARBER

52 HUNTINGDON RD

CAMBRIDGE ENGLAND

Lord Bacon

Sleeves, J. W. Francis Bacon. A Sketch of his Life, Works & Literary Friends; chiefly from a Bibliographical Point of View. London 1910

p 72 etc.

Posthumous publn. "Sylva Sylvarum, or a Naturall Historie in Ten Centuries" 1627 (reprinted 1635, 1639, etc)
Discusses among other things germination of plants.

p 60 also see Historia vitae et mortis. of which an English edition appeared in 1638

"Nous avons trop souvent, en France, le tort de
faire dater la botanique de l'ère Linnéenne, et
de ne pas rechercher, dans les ouvrages de nos
anciens, s'ils n'auraient pas fait déjà les
observations dont nous sommes tentés de nous
attribuer la priorité.

Charles Des Moulins
Actes de la Société Linnéenne de Bordeaux
T. XVI p. 63, 1849

(1849) see W. P. Butler f. letter

"Ces rares et précieux ouvrages de nos
anciens, qu'il faudrait feuilleter sans
cesse.

Christ, H. Die Ansichten des Silvio Boccone über künstliche Befruchtung von Kulturpflanzen 1697. Ber. d. deutsch. bot. Gesellsch. ~~Jahrg~~ Bd XXX
pp 376 – 384, 1912

"Museo
Figures the frontispiece of Boccone's
di piante rare .... in Venetia 1697
Contains portrait of Boccone
Describes the ♂ ♀ of Pistachio (Pistacia vera) & says that in Sicily the ♂ P. is hung on a branch
a vase with the flowers, that the pollen falls on the ♀
of the ♀, so
(He distinguished the sexes rightly

"Wie wir nun sehen, dass einige Ausflüsse (efflurii) der Erde den Pflanzen schaden, so können wir auch begreifen und zugeben, dass die Teilchen der Spitzen der männlichen Blüten der Pistazie infolge ihres Ölgehalts (Oleosità) fähig sind, die weibliche Pistazie zu befeuchten, zu benetzen und fruchtbar zu machen, selbst wenn es Beispiele gibt, dass in Italien ohne Beihilfe männlicher Pistazien die weibliche zuweilen, aber nicht regelmässig alle Jahre, reife Früchte gebracht at.

Pomet, Pierre

Histoire générale des drogues ... Par le Sieur Pierre Pomet Marchand Epicier et Droguiste à Paris Chez Jean-Baptiste Loyson, et Augustin Pillon, sur le Pont au Change, à la Prudence. et au Palais, Chez Estienne Ducastin, dans la Gallerie des Prisonniers, au bon Pasteur. Avec Approbations et Privilege du Roy. 1694

(This is not the first edn. or impression for I gather from the introductory letter that the first was not earlier than 1692 — more probably 1693.

A good deal of unseemly stuff & quaint copper plates. Signs make an artist

Figures en Taille-Douce

Rams little Dodeon.

A briefe Epitome of the new Herbal, or History of Plants. x x x x Collected out of the most exquisite newe Herball, or History of Plants, first set forth in the Dutch or Almayne tongue, by the learned & worthy man of famous memory, D. Rembert Dodeon Physicion to the Emperour; And lately translated into English by Henry Lyte, Esquire: And now collected & abbridged by William Ram, Gent.

x x x x Imprinted at London by Simon Stafford x x. 1606 (1st ed)

(This book is pure medical & admonishments on various subjects. no botany, & no pictures.

"my endevor herein hath bin chiefly, to make the benefit of so good, necessary, & profitable a worke, to be brought within the reach & compasse as well of you my poore Countrymen & women, whose lives, healths, ease & welfare is to be regarded with the rest"

"my onely & greatest care hath byn of long tyme, to knowe or thinke, how & upon whome to bestow the dedication of this my small labor: And in the penning of this my letter, my Affections are satisfied with the dedication thereof to thee my poore & loving countryman whosoever, to whose hand soever it may come. For whose sake I have desired publication of the same, beseeching Almighty God to blesse us all."

William Ram

Byes and Bewares medical & horticultural, for every month, — sometimes breaking into poetry

A shower in March, Another in May ~~the~~
The third in Avarill
The fourth about the Lammas tide,
When Corne beginnes to fill,
Is well worth a plough of gold,
And all that longs theretill
(Cf rhyme on p.16 of Guy de la Brosse note book)

March sayd to Avarill
I see three hogges upon a hill:
Vilt thou lend me dayes three,
Ize do my good will to make them die,
When three days were come & gone,
The three hogges came hopping home

December "Use Doctor Diet, Doctor Quiet, & Doctor Merryman, for thy Physicions."

Bewares for getting herbs

Evil for the braine "Too much watching, too much walking, ---- great noyse, To smell of a white Rose, much stirring."

Good for ye eies "Look oft on gold, Red Roses" etc

Good for the heart, Saffron, Bourage, Laughing, Joy, Muske, Cloves & Nutmegs, Galingale, Red Roses, Violets, Sugar, Maces before all things."

79

622 **PLANTE HUMAINE** (La) sur le trespas du roy Henry Le Grand, où se traicte du rapport des hommes avec les plantes qui vivent et meurent de mesme façon... par Louys d'Orléans. *Lyon, Claude Morillon*, 1622, fort vol. in-8, vélin. 12 fr. 50

Très curieux ouvrage, rare. Vie des fleurs. Rose de laurier est venin. Remèdes tirez des arbres. Roses milésiennes. La pomme assyrienne. Plantes subjectes à beaucoup d'accidents. Sexe des palmes, pins, et des vignes. Herbes vénéneuses. Herbes qui ne veulent être touchées de fer. Fidélité des plantes. Forest d'Ethiopie. Propriétés des figuiers d'Inde, etc., etc.

"The Mystery of the Saint." Review in
Times Literary Supplement Sept-11. 1913

The author speaks of the seventeenth century as
"that age of spiritual dissatisfactions & fatalities,
of conversions, of sinners & the saints which
they call forth." & speaks of the "spiritual volatility" of
the century.

Pascal, St. François de Sales, Bossuet,
Fenelon, St. Vincent-de Paul help to
the century.

"There was already in France in the middle of the
seventeenth century an outburst of philanthropic
& religious fervour like that of art 200 years before,
in poetry in Elizabethan England

"The Two Essays"

Don Quixote Ker, W.P. in
Glasgow 1918.

p 6

"The point of honour is more emphatic in
the generation of Calderon than it was before; & just
as in England the cavalier ideal of Montrose's time
is in many respects finer than the Elizabethan; "the
love of honour, the honour of love" are wrought
into a more piercing flame of inspiration" the
seventeenth century."

Plot, Robert A Natural History of Oxford-shire 83 11

Oxford 1677

[Lib. 2.67.1]

Plants
p 143

Opp p. 146. a full page engraving of 7 plants found in Oxfordshire which Plot regards as undescribed.

p 148
Fasciation in Dyers-weed & Succory
"The fasciation (if I may be allowed to coin such a word)"

p42
"But the Experience, that great-baffler of speculation"

Notes from Originals . Seventeenth Century

A
84

De Passe

Boccone

Hermann

Parkinson

de Passe, Crispin. Hortus Floridus. 1614

Portraits of Clusius & Dodoens on title page. Later description
Most beautiful & freely drawn copper plate ~~cast~~ etchings,
chiefly of garden plants. (Note special fruit-stalks of
Cyclamen) Often the plants are represented growing in
the soil ~~with a two~~ rising above the horizon ones eye level being
near the ground. One perfectly charming one of
crocuses growing & one or two corms lying on the soil
so that their form can be seen, & to make it more
realistic, the most fascinating mouse is nibbling one
of the uprooted corms. Format, the page is wide & short
Plate is about 1½ times as wide as high
[illegible] top & bottom.
Most successful with bulbous plants.
Some figures reproduced in Chapman's Craftsman's
Plant Book

A Garden of Flowers   Crispian de Passe   1615.

Begins with the title page reproduced by Crispian de Passe' Hortus Floridus 1614. Then follows the title page of the book itself

"A Garden of Flowers, wherein very lively is contained a true & perfect discription of al the flowers contained in these foure following bookes. As also the perfect true manner of colouringe the same with their naturall colours, beinge all in theire seasons the most rarest & excellentest flowers, that the world affordeth: ministringe both pleasure & delight to the spectator, & most espetially to the well affected practicioner. All which to the great charges, & almost incredible laboure & paines, the diligent Authore by foure yeares experience, hath very laboriously compiled, & most excellently performed, both in theire perfect lineaments in representing them in theire coper plates: as also after a most exquisite manner & methode in teachinge the practicioner to painte them even to the liffe. Faithfully & truely translated out of the Netherlandish originall into English for the commun benifite of those that understand no other languages, & also for the benifite of others newly printed both in the Latine & French tongues all at the charges of the Author.
Printed at Utrecht, By Salomon de Roy, for Crispian de Passe. 1615.

Directions are given for painting the flowers [which are arranged according to the 4 seasons]. The B.M. copy is painted, — possibly by the publisher

An encouraging rhyme at the beginning of each of the four seasons:—

"How carefull-diligent I have bene,
These colloures to expresse:
A painefull paintinge of the same
Good reader use no lesse"

(at beginning of summer flowers)

If hetherto (my frende) you have,
Performde the taske in hand:
With ioy proceede, this last will be
The best, when all is scande.

(at beginning of winter flowers)

Icones et Descriptiones rarorum
plantarum Siciliæ, Melitæ, Galliæ, et
Italiæ
Paulo Boccone
e Theatro Sheldoniano 1674

cop Tab 20 p 41

very nice natural crowded copper plates.
Camb. Botch Library T.

Paradisus Batavus

Paulus Hermannus

Lugduni batavorum

apud Abrahamum Elzevier

1698

Very good copper plates

Paradisi in Sole Paradisus Terrestris. A Garden of all sorts of pleasant flowers which our English ayre will permitt to be noursed up: with a Kitchen garden of all manner of herbes, roots, & fruites, for meate & sause and An Orchard of all sorte of fruitbearing Trees & shrubbes fit for our Land together With the right ordering planting & preserving of them & their uses & vertues Collected by John Parkinson Apothecary of London 1629.

Paradisi in Sole Paradisus terrestris or a garden of all sorts of pleasant flowers .... of herbs, roots & fruits ... together with the right ordering planting & preserving of them & their uses & vertues.

John Parkinson. London 1629

ded. to the Queenes most excellent maiestie

"Accept, I beseech your Maiestie, this speaking Garden"

"God, the Creator of Heaven & Earth, at the beginning when he created Adam, inspired him with the knowledge of all naturall things (which successively descended to Noah afterwardes, & to his Posterity): for, as he was able to give names to all the living Creatures, according to their severall natures; so no doubt but hee had also the knowledge, both what Herbes & Fruits were fit, eyther for Meate or Medicine, for Use or for Delight."

Elaborate directions for the planting & treatment of a garden, followed by an account of the plants cultivated with their uses in gardens at that time. Full page wood blocks in each of which a number of different plants are represented.

And lastly, take this, which is not the least observation,
worth the noting, that I have observed in many: When they
have beene of one entire colour for divers yeares, yet
in some yeare they have altered very much, as if it had
not beene the same, viz. from a purple or stamell, it
hath beene variably either parted, or mixed, or striped
with white, eyther in part, or through the whole flower, &
so in a red or yellow flower, that it hath had eyther
red or yellow edges, or yellow or red spots, lines, veines,
or flames, running through the red or yellow colour,
& sometimes it hath happened, that three leaves have
been equally parted in the middle with red & yellow, the
other three abiding of one colour, & in some the red hath
some yellow in it, & the yellow some red spots in it
also: whereof I have observed, that all such flowers, (for some
not having their originall in ~~that manner~~,
that have such or the like markes from the beginning,
that is, from the first & second yeares flowring, are
constant, & doe not change) but as I said, were of
one colour at the first, doe shew the weaknesse
& decay of the ~~roote~~ roote, & that this extraordinary
~~beauty~~ beauty in the flower, is but as the brightnesse
of a light, upon the very extinguishing thereof, & doth
plainly declare, that it can doe his Master no more
service, & therefore with this iollity doth bid him
good night. I know there is a common opinion
among many (& very confidently maintained) that
a Tulipa with a white flower, hath changed to
beare a red or yellow, & so of the red or yellow, &
other colours, ~~that~~ they are likewise inconstant, as

though no flowers were certaine: but I could never either 5 B
see or heare for certaine any such alteration, nor any 91
other variation, but that is formerly expressed. Let
not therefore any judicious be carried away with
any such idle conceit, but rather suspect some
deceit in their Gardeners or others, by taking up one,
& putting in another in the place, or else their owne
mistaking.

Paradisus
Terrestris
pp 62–63
[illegible] tulips

Theatrum botanicum: the theater of plants. Or, an herball of large extent.

"with the chiefe notes of D. Lobel, J. Bonham, & others inserted therein.

London, printed by Tho. Cotes. 1640

To the Reader

"The disastrous times, but much more malitious & perverse men have so farre prevailed against my pretended purpose, & promise, in exhibiting this Worke to the publicke view of all, that their extreame covetousnesse had well nigh depriued my Country of the fruition: But having at last, though long & with much adoe, broken through all obstacles opposing (tandem prodiit in lucem."

Ded: to the King

"Having by long paines & endeavours, composed this Manlike Worke of Herbes & Plants, most gracious Soveraigne (as formerly did a feminine & Flavers, presents to the Queenes most excellent Majesty)

many laudatory letters, one of which speaks of his "Herculean Botanicall labours".

The herbal opens with the list of "the Classes or Tribes contained in this Worke" the names of which are given in Latin & English. I quote the English only:—

1. Sweete smelling Plants
2. Purging Plants
3. Venemous, Sleepy, & Hurtfull Plants, & their Counterpoysons.
4. Saxifrages, or Breakestone Plants
5. Vulnerary or Wound Herbes.
6. Cooling & Succory-like Herbes.
7. Hot & sharpe & biting Plants
8. Umbelliferous Plants
9. Thistles & Thorny Plants
10. Fearnes & Capillary Herbes *
11. Pulses
12. Cornes
13. Grasses, Rushes & Reedes
14. Marsh, Water & Sea Plants, & Mosses, & Mushromes
15. The Unordered Tribe
16. Trees & Shrubbes
17. Strange & Outlandish Plants.

* Consisting of ferns with Polytrichum & Drosera

According to the preface of the Parkinson's original Paradisus Terrestris, the idea was to explain his account of the Flower Garden, under account of "A Garden of Simples." Later on the idea was enlarged into a more general work, but the idea was still predominantly medical

Descriptions are considerable longer than names given by previous authors & their virtues

(p 493 some pictures of Monstrous Plantains)

p 1611 (in the Table?) A long description of the sorts in which he states of the Unicorn, whose horn is said to be used precious often in medicine at "liveth so farre remote from these parts, & in huge vast Wildernesses among other fierce & wilde beasts, Tigers, Panthers, etc."

p 1593. Mummy, with a picture of a corpse (Fig. 17)

p 1317 Parkinson states that Gerard received ~~the~~ Dr Priest's translation of Dodoens from Norton to finish

In the preface rather down on Johnson speaking of his own work he says :— "this was a taske lay somewhat heavy on me to undergoe, & tooke up no small time to finish, howsoever Master Johnsons agility could easily wade through with it, & his younger years carry away greater burdens, for saith he, heavy taskes are worst borne by them that are least able, but his quicke speed may conclude with this adage Canis festinans caecos parit catullos:"

(cf Parkinson Theatrum on Johnson's Gerard)

see Ger A & B. of healing tulips in Paradisus Terrestris

A Discourse Concerning the Vegetation of Plants. U*.8.47(5) 96

Spoken by Sir Kenelme Digby, at Gresham College, on the 23. of January, 1660. At a Meeting of the Society for promoting Philosophical Knowledge by Experiments: London: Printed by J. G. for John Dakins near the Vine Tavern in Holborn, 1661

p 63

"The Fathers of the Christian Doctrine at Paris doe still keep by them for a monument (and indeed it is an admirable one) a Plant of Barley consisting of 249 (sic) stalkes, springing from one Root or Grain of Barley, in which they counted above 18000 Grains or seeds of Barley.

p 46

"And he ~~that~~ that should looke barely upon the two extreme terms, the beginning & the completing of a plant, might think there were a perpetuall miracle in the production of vegetables, & might be excused for having recourse to a *vis formatrix*, & such other insignificant terms. But another that considereth the whole course of nature set on foot by God Almighty for this admirable work; & fixeth his foot at every particular joint, not stirring it from thence till he have fully examined & discussed what must necessarily follow in such a one of such or such matter, so & so tempered, & so & so such circumstances,

wrought upon; we evidently discern that it is thenceforth impossible, any thing should happen in it otherwise then just what should ~~doth~~. And it is want of consideration & of judgement which maketh men fly to occult & imaginary qualities, to shroud their ignorance under inconceivable ~~terms~~ termes: Whereas nature in her self is pervious & open to humane discovery, if a due course be taken to discern & survay her."

p 73

He is unable to confirm a story of the ashes of a Rose, a Tulip or a Clove-gilly-flower each in a hermetically sealed vessel, giving rise when heated to "the Idea of the Flower" ... in "perfect Colour, Shape, Magnitude, & all other accidents, as if it were really that very Flower". But he (p. 76) describes the following experiment which he says he has repeated & found to be "exactly true": "I calcined a good quantity of Nettles, Root, Stalks, Leaves, Flowers; in a word the whole Plant. ... these Ashes; which ... With fair water I made a lye of these. This lye was exposed I filtred from the insipide Earth. This lye was exposed by me in the due season to prove the Frost congeal it. ... And it is most true, that when the water was congealed into ice, there appeared to be abundance of Nettles frozen in the ice. They had not the colour of Nettles. No greennesse accompanyed them. They were white. But otherwise, it is impossible for any Painter to

delineate a theory of Nettles more exactly, then they were designed in the water. As soon as the water was melted, all these Idaeall shapes vanished: but as soon as it was congealed again, they presently appeared afresh. ... What could be the reason of this phoenomen? There is no doubt but that a main part of the Essential substance of a Plant is contained in his fexed Salt. This will admit no change into another Nature; but will charges be full of the qualities & vertues of the Plant it is derived from; ... If all the Essential parts could be preserved, in the severing & purifying of them, I see no reason but in the reunion of them, the entire Plant might appear in its Complete perfection, so one could finde a fit medium to dilate it in.

// Queer mystical & rather vague, but stirring the chemical interpretation of plant life - no distinction between vitalistic & inorganic changes - In fact (p 80) he does not allow that plants have life, but ranges them with the inorganic. Strongly influenced with the sequence of cause & effect in plant life.

99

Lee, S. Great Englishmen of the Sixteenth Century. London 1904

Francis Bacon

p215. Son of Sir Nicholas Bacon, Lord Chancellor (p216)

p.216

Family not rich but reasonably well provided for.

b. 1561.

Went to Trinity College as the custom then was at 13.

p216. From boyhood he had ambition to extend man's the range of man's knowledge of improving man's reasoning faculties but (p217) his father's death left him with narrow income, & he felt necessary a large income & a great position & for his intellectual problems & carrying out his intellectual ambition (p218) "If the intellectual work to be done at all when he was called were, the material circumstances no opportunity of securing the material character was he justified in rejecting."

p223

In connexion with his patron Essex he sacrificed all ordinary considerations of honour

p232

Novum Organum 12 times rewritten.

p235

A pitiable failure in the conduct of his affairs & in the management of men

p233

Charged with taking bribes & corruption in administering justice p234 Dismissed from his office & rendered his active career in deep disgrace

p248

He failed to keep himself abreast of the scientific knowledge of the day. He knew nothing of Harvey's discovery of the circulation of the blood which was enunciated in H's lectures 10 years before Bacon died. He ignored Gilbert's researches on the magnet — [or rather scorned them! A.A.] And he was apparently unaware of Galileo's work (p. 249) Galileo's find confirmation of the Copernican system of astronomy which proved that the earth went round the sun, never moved Bacon's recognition. He stuck to Ptolemy's geocentric theory that the earth was the fixed centre of the universe. His greatness in the history of science lies in the impetus which his advocacy of inductive & experimental methods gave to future scientific investigation.

p246

In an analysis of the main defects in the operation of the human intellect in its search of the truth Bacon devoted much attention.

Francis Bacon, Lord Verulam The Novum Organon
trans by G. W. Kitchin. Oxford University Press 1855

Distributio Operis p xxv

Bacon aims at the discovery of principles of the Interpretation of Nature!

p 9. Organ tells of his method as "The Interpretation of nature"

Failures of the intellect

p 21

The Human Intellect, from its peculiar nature, easily supposes a greater uniformity & equality in things than it really finds; & though there are many things in nature unique & full of inequality, yet it feigns parallels, correspondents & relations which do not exist.

preconceived ideas

p22. No: 46

The human Intellect, in those things which have once pleased it, ... draws also all other things to vote with & consent to those — & though the weight & multitude of contrary instances be the greater, yet either it does not observe them, or despises them, or ... rejects them ... in order that the authority of those previous conclusions may remain unshaken. And so he answered well, who, when the picture of those who had fulfilled their vows after escaping the peril of shipwreck were shown him hung up in a temple, & he was pressed with the question, did he not after this

ante Aristotle ~~revw~~ 103 3

p34. No. 63

"Aristotle ... imposed innumerable ... fictions on the nature of things at his own will; being everywhere more anxious ~~to show~~ as to how one should extricate oneself by an answer, show some positive reply in words should be made, than as to the internal Truth of things. And this is best shown of his Philosophy when compared with ~~the~~ other Philosophies which were well known and received among the Greeks. For the homoeomera (similar constituent parts) of Anaxagoras, the "Atoms" of Leucippus & Democritus, the "Heaven and earth" of Parmenides, the "strife and friendship" of Empedocles, the "resolution of bodies into the indifferent nature of Fire, and "the return of bodies to same" of Heraclitus, have all something of the natural philosopher in them; & savour of the nature of things, of experience, and of bodies: whereas Aristotle's Physics for the most part are nothing but a sound of Dialectical Terms; ... Nor let it stagger anyone ~~that~~ ... there is frequent handling of experiments. For ... after he had formed his judgment at his will he then brought in Experience, tortured as captive to his conceits."

p26. No. 54

Men love particular sciences and subjects of thought, either because they believe themselves to be the authors and discoverers of them, or because

acknowledge the Providence of the Gods, asked him, "But where are they painted who, after their vows, perished?" [and the gods on] Such is the peculiar & perpetual wandering of the human Intellect that it is more moved & excited by affirmatives than by negatives. Whereas properly it ought .. both."

p 28

"And as a general rule; every one who contemplates the nature of things must suspect whatever especially charms & captivates his own Intellect."

Difficulty of altering Terminology

p 29 (No. 59)

"Men believe that their reason rules over words; but it is also the case that words react & in their turn use their influence on the Intellect: ... But words for the most part are imposed on the rule of the vulgar, & divide things by lines most conspicuous to the vulgar Intellect. When however a sharper Intellect or more diligent observation ~~wishes~~ wishes to shift those lines, that they may be more in accordance with Nature, words cry out against it. Whence it comes that the great & solemn disputations of the learned often degenerate into controversies about words & names."

Dangers of the inductive method

p 33

"There is too another class of Philosophers, who having laboured sedulously & accurately on a few experiments, have dared to educe & build up thence their Philosophies, twisting everything else wonderfully into agreement with them."

they have spent the greater amount of labour upon them, & have been most accustomed to them. And men of this sort, if they betake themselves to Philosophy & universal subjects of thought, distort & corrupt these by their previous fancy."

p 35. No. 64 (continuation of former idea)

"The Empiric kind of philosophy produces views more misshapen & monstrous than the Sophistic or "rational" school. For its foundations are laid not in the light of vulgar conceptions (which though it be light & superficial, yet is in a manner universal, & pertinent to many things) but on the narrow & dark basis of a few experiments. ---- a caution was by no means to be omitted unexpert to Philosophers of this class; because we already foresee in mind, & augur, that if ever men, roused by our monitions, should bid farewell to sophistical teaching, & betake themselves earnestly to experience; then certainly a great peril will be imminent from Philosophies of this class, on account of the premature & rash haste of the Intellect — its leaping & flying to generals & to the first principles of things."

pp 36-37. Philosophy should be kept free from admixture with theology. p 37. Condemns the attempt "to found natural Philosophy on the first chapter of Genesis".

pp 41-42 (5

Points out that it is damping to the human intellect to believe that truth is not discoverable

Plato's school ... cry for themselves that they ... have something which they can follow as Probability, though not what they could hold as truth; nevertheless after the human mind has once despaired of the discovery of truth, all things in all ways become more languid; & therefore men prefer to turn aside to pleasant disputations & discourses, & sundry wanderings through the fields of knowledge, rather than sustain any severity of inquiry.

p 43
(aphorism 69)
"That method of discovery & proof, which first establishes the most general principles, & then applies to them & proves by them the intermediate axioms, is the mother of errors, & calamity of all sciences."
[He means Deduction AA]

p 44. N° 70
"For no one happily explores the nature of a thing in the thing itself; but the inquiry should be extended to what is more general. But if men even build up some science & dogmas from experiments yet they almost always turn aside with a hasty & untimely eagerness to practical application; not only for the sake of the use & fruit of that same application to practice, but also that in some

new work they may snatch for themselves as if were a pledge that they will not employ themselves uselessly in the rest; they even make the most of themselves & others, in order that they may gain a higher reputation in those subjects on which they are engaged. Whence it comes that; like Atalanta, they go aside & take up the golden apple, so meanwhile interrupting their course & letting victory slip out of their hands.

p45 --- in experience of every kind, first the discovery of causes & true Axioms is to be made; & light-bringing not fruit-bringing experiments to be sought for. And Axioms rightly discovered & established supply practical uses not scantily but in crowds; & draw after themselves bands & troops of effects."

p46

Now the wisdom of the Greeks was showy & professorial & much given to disputations; a kind most averse to inquiry into truth ---- But those more ancient Greeks, Empedocles, Anaxagoras, Leucippus, Democritus ..... [names others] did not open schools (so far as we know) : but with a greater silence, severity, & simplicity, that is, with less affectation & show, betook themselves to the inquiry after Truth." --- p47 "Nor yet were even these entirely free from the fault of their nation; but leaned too much to the ambition & vanity of building a sect, & of catching the breath of popular applause. But the inquiry after Truth must be regarded as hopeless, when it turns

aside after worthless objects of this kind.

p 48. Uses the word "experiments" rarely to mean observations of a scientific kind.

"in our day both many parts of the New World, & the farthest limits of the Old are well known on all sides, & the heaps of experiments has infinitely increased."

p51. No. 76

there was of old so great a dissension among Philosophers & variety of schools: a thing which sufficiently shews that the way from the ~~Senses~~ Senses to the Intellect was not well made, when the same material of Philosophy, (the nature, that is, of things) is carried off & drawn aside into so wide & multiplied errors.

Argument from acceptance, Aristotle

No. 77 p52

Then as to the opinions of men, that there is a great consent in Aristotle's Philosophy; ~~since after its promulgation the system of~~ ... But this plea of consent is deception, if men would look a little more sharply into it. For a true consent is that which consists in an unanimity of free judgement (after ~~due~~ investigation). But by far the greater number of those who have given in their assent to Aristotle's Philosophy have enslaved themselves to him from prejudice & authority of others; so that it is rather obsequiousness & concurrence than consent. But even if this had been a true & wide-spread consent, so little ought

to be held as true & sound authority, that it even ought to produce a violent presumption to the contrary. For that is of all arguments the worst which is drawn from consent—in intellectual subjects: save in matters of Divinity & Politics, in which suffrages have weight in decision. ... And so the saying of Phocion—"that men ought straightway to examine themselves as to what error or fault they have committed, when the multitude assents to & applauds them"—may very well be transferred from things moral to things intellectual."

p 71

"Scholastic Theologians; who while they have (as far as they could) reduced theology into order ... have besides succeeded in mingling far more than was right of the ~~contentious~~ & thorny Philosophy of Aristotle with the body of Religion." Aristotle & Religion

pp 79-80

"There is no hope save in the Regeneration of sciences; they must be raised up & rearranged of experience in fixed order" &c.

p 80 Failure of early natural science

"Nothing in Natural History is found to be duly investigated, nothing verified, nothing numbered up, nothing weighed, nothing measured. And that is in observation indefinite & vague, the same in information is deceitful & unfaithful."

p 81

"There is one kind of Natural History, which is made for its own sake; another kind which is gathered under & the for the information of the Intellect & building up of Philosophy."

9

p 84

"And we must not add wings, but weights, lead, to the Intellect, so as to hinder all leaping & flying: when it has been done, we shall be allowed to entertain better hopes of the sciences."

pp 90–91

"Let men consider the infinite expenditure of talent, time, & fortune, which men lavish on things & studies of far less use & price; of which if only a little part were turned to sane & solid matters, there is no difficulty which could not be overcome. And this we have thought it right to add, because we plainly confess, that the collection of a natural & experimental history, such as we trace out in our mind, & such as it ought to be, is a great work, & as it were regal, & one requiring much labour & cost."

p 91

And something of Hope may also be afforded to men from my own example. Nor do I say this for boasting's sake; but because it is profitable to be said. If any lack confidence, let him regard me, a man of all men of my age most occupied with civil affairs, & of but infirm health (a thing most wasteful of time); one too who in this matter am clearly a pioneer, & have followed no man's foot-steps, nor have considered these matters in company with any; & yet let him see how I, having entered

we constantly upon the true way, & submitting my wit to facts, have (as I think) carried these matters some way forward:"

p 98

"For whatever is worthy of Existence is worthy of Knowledge — which is the Image (or Echo) of Existence. Now the vile exists as well as the splendid." Spengiste

Book 2.

aphorism 29. p 184

Deviating Instances; i.e. Errors of Nature, things strange & monstrous, wherein Nature declines & turns aside from her ordinary course. ~~E~~ .. the .. miracles of individuals ... are .. Errors of Nature ... they rectify the Intellect against Habit, & reveal common Forms. Nor may we in these desert from inquiry until the cause of this kind of deviation be discovered. ... For he who knows the ways of Nature will with greater readiness observe her deviations from the way. And again: he who knows her deviations will describe her ways with greater accuracy." Teratology

Bindell cases

aphorism 30 p 185

Frontier Instances. "These are those which exhibit such kinds of bodies as seem to be compounded of two kinds, or to be rudiments between two kinds. ... they indicate best of all the composition & fabric of things, & suggest causes for the number & quality of the ordinary species ~~Spec~~ in the World, & draw the Intellect from what is to what can be. Examples of these are; of Moss, between corruption & plant; ... flying fish, between birds & fishes; Bats between birds & quadrupeds; ... Mongrels of different species; & the like.

p 207

"Crucial Instances: a name transferred from the crosses (or fingerposts) which are put up in crossways to mark & point out different ways."

Development research

p 234

Men contemplate Nature in a desultory fashion, & at periodic intervals, & after their bodies are finished & complete, & not in the course of their making. ... If any one inquires about the vegetation of plants, he must watch from the first sowing the seed, (which can easily be done, by pulling up, every day or so, seeds which have been in the ground two, three, four days, & so on, & by examining them carefully,) ... ~~how when seed begins to~~

microscopy

p 221-222

"these microscopes lately discovered, which show us the latent & invisible minutiae of bodies, their hidden structures & motions, by wonderfully increasing the size of objects. ... But the inadequacy of such microscopes, except for minutiae only, (& not even for them, if they be in a large body,) destroys the use of the thing. For if the discovery could be extended to larger bodies, or their particles; (so that the texture of a piece of cloth could be looked on like a net, ...) then doubtless great advantage might be reaped from this invention."

112

Whewell, W. History of the Inductive Sciences.
vol III. 1857

p243
Regards Morison as the next successor to Caesalpinus
but says that M. not choosing to acknowledge
indebtedness to so old a writer, hardly mentions him,
tho' he even transcribes his words without acknowledgment.
(gather this fr Cuvier)

p246
Rare flowers were cultivated - Paris & pictures of them
made, in order to supply the embroiderers of the court-robes with new patterns. Figures of the most
beautiful flowers in the garden of Pierre Robin were
published by the court-embroiderer Pierre Vallet in 1608
under the title of "Le Jardin du Roi Henry IV".

p247
Cuvier in his "Leçons" speaks of chaos as regard nomenclature
before the synonymy of Botany was tackled by
Caspar Bauhin, Pinax Theatri Botanici 1623

p251
Ray had Jung's work in MS & was much influenced
by it.

Beiträge zur Jungius-Forschung.

Festschrift der Hamburgischen Universität anlässlich ihres zehnjährigen Bestehens. Hamburg. 1929.

Prolegomena zu der von der Hamburgischen Universität beschlossenen Ausgabe der Werke von Joachim Jungius. (1587-1657)

(Singer Libr.) J. Schuster,

Contains an article by

Jungius' Botanik als Verdienst und Schicksal.

113

Guhrauer, G. E. (1850)
Joachim Jungius und sein Zeitalter.
Stuttgart & Tübingen 1850

Jungius b. 1587 (Bacon 1560
in Lübeck Kepler 1571
Descartes 1596)

p2. brought up in Lutheran religion

p13
Studied in the Universities Rostock & Giessen
Took his degree in philosophy in 1608

In 1609 returned to Rostock

p189
In letter, Goethe's he classes Jungius with
Bacon, Descartes & Galileo

[This is an awful book. It would take 20
years to dig anything out of it. A. A.]

d. 1657

Joachimi Jungii ... Opuscula Botanico-Physica.
ed by Martinus Fogelius & Johannes Vagetius.

Coburg. 1747

ed. by Joh. Sebast. Albrecht

p6
Divides plant into root & "Pars superna"
& "Limes communis" his words then.

p7 Pars superna consists of Caulis, Folium, Flos, Fructus & then minor "secondary" parts eg. Villus or Spina

Caulis is caudex in trees & herbs
Culmus in Frumenta

p8
Distinguishes simple & compound leaves
various degrees of marginal cutting
Recognises the onion leaf as a concave fistular leaf (have an upper & under surface like simple leaves a...)

He points out that compound leaves fall off whole in the autumn like simple leaves, & that it's "due to ignorance or carelessness that they have been mistaken for shoots"

p9
Distinguishes digitate (or palmate) & pinnate leaves
also pari pinnate & impari pinnate

p10 deals with heterophylly - several planes

p18
Defines evergreens & perennials

(Jung's Isagoge)

p 33
Distinguishes "flosculous" & tubular florets in the Compositae

p35
Distinguishes doubleness in single flowers & in the Compositae where he describes the marginal strap shaped florets obliterating the disc florets.

p 37 Very detailed description of stamen forms including a mention of the winged filaments of Ornithogalum.

p42
Uses pericarpium & "vasculum seminis"

p43
"Thus the purpose is made for the flower as evening from afternoon"

p44
The fruit is the seed or seedvessel, but he expressly excludes the perianth which may remain round the fruit e.g. in Labiates

p45
Pea seed is bivalved

p47
Notes apparently by the 18th century editor who says that the Isagoges do not appear to have been in Jung's autograph but to have been dictated.

(Lindley's Days?) 1[illegible]

p 15
Inflorescences simple eg Dandelion,
Umbel of auricula
Determinate stem ending in terminal capitulum, spike, panicle, umbel or corymb

p 20
Mention of female hyacinthus comosus

p 20
He doesn't mean corymb & umbel exactly in our sense — Hedera arborea is a corymb & Fennel an umbel.
The indeterminate stem (i.e. inflorescence A.A.) which has no limit to its extension (unless it is stopped by winter cold) & bears flowers in pairs laterally.

p 23
Flowers are either naked or provided with perianths — but he doesn't mean that we mean — his "perianth" is a calyx & thus he calls tulip a naked flower or a spathe

p 26
Recognises the existence of dioecious flowers, of Elm.
Distinguishes perfect & imperfect flrs.
Points out that in various Compositae the florets have falsely been described as stamens "the discs of these plants are made up of tubular flowers"

117

D. Ioachimi Iungii
De Plantis Doxoscopiae Physicae Minores

p70
Instead of using up the term ~~understood & expected of~~ shrub say "many-stemmed perennial plant" & tree "one-stemmed perennial plant".

p72
Whether the division of plants into trees & herbs is a specific one is open to doubt.
Points out that various plants can be trees in one climate & herbs in another

p76
doubts importance to leaves in distinguishing species because they are generally not got in summer perhaps fail easily seen. He says this is merely a matter of convenience. The structure But ~~he~~ then is not denying that declare as specific definitely says that he does not deny that the structure of the flower & seed ~~makes the~~ are ~~better~~ specific distinctions better than are the leaves

p77
Differences in spines, colour, odour, ~~smell~~ taste, medical qualities, place, time of germination, number of flowers & fruit are accidental & do not imply specific difference. Acanthus may be spiny in one country & not in another.

p32 and
Points out absurdities of nomenclature e.g. Centaury known to vulgar tongue as Tausendguldenkraut because believed to mean Centum aureis whereas it is really called after Chiron the Centaur