

**THE PROJECT GUTENBERG EBOOK OF DE USU RATIOCINII MECHANICI IN  
MEDICINA, BY HERMAN BOERHAAVE**

This ebook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this ebook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you'll have to check the laws of the country where you are located before using this eBook.

Title: De Usu Ratiocinii Mechanici in Medicina

Author: Herman Boerhaave

Release date: April 22, 2005 [EBook #15680]

Most recently updated: December 14, 2020

Language: Latin

Credits: Produced by Frank van Drogen and the Online Distributed Proofreading Team.

\*\*\* START OF THE PROJECT GUTENBERG EBOOK DE USU RATIOCINII  
MECHANICI IN MEDICINA \*\*\*

**HERMANNI BOERHAAVE**  
**DE USU RATIOCINII MECHANICI IN**  
**MEDICINA**

---

**ORATIO**

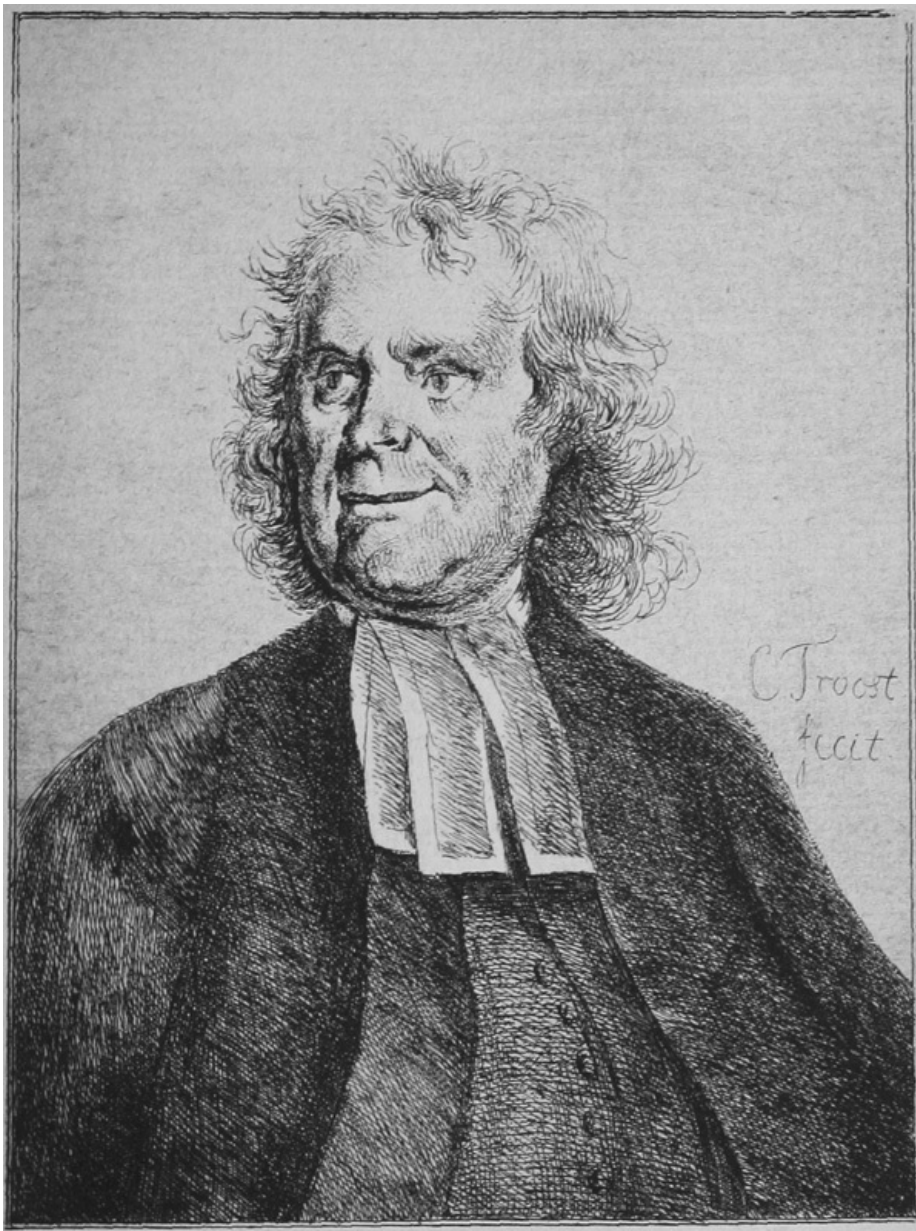
**HABITA IN AUDITORIO MAGNO**

**XXIV. SEPTEMBRIS.**

**MDCCIII.**

**CUM TERTII SUAE STATIONIS ANNI LABORES AUSPICARETUR.**

---



Boerhaave.

---

*NOBILISSIMIS ET SPLENDIDISSIMIS VIRIS*  
ACADEMIAE BATAVAE  
CURATORIBUS,

D. JACOBO, BARONI WASNARIAE, Toparchae Opdami, Hensbroek, Wochmeer, Spierdijk, Zuydwijk, Kernchem, Twikelo, Lage, etc. Ordinis Equestris Nobilium Hollandiae Primo Assessori, Illustris Ordinis Equestris Danici, Cujus insigne Elephas, membro, Equitum Foed. Belgicae Magistro. Munitissimae Urbis Sylvae Ducis Gubernatori. Ad Potentissimos Poloniae et Borussiae Reges, ad Serenissimum Electorem Hanoveriensem, et ad Plures Germaniae Principes, Legato Extraordinario, etc. etc.

D. HUBERTO ROSENBOOM, Jcto, Toparchae in 's Grevelsregt, Supremae Batavorum Curiae Praesidi, etc. etc.

D. HERMANNO VAN DEN HONAART, Jcto, Viro Consulari in Senatu primae in Hollandia Dordrechtanorum Urbis, ejusque Voto in Delegatos Praepotentium Ordinum Hollandiae adscripto, Comiti Aggerum Alblasserwaarde, etc. etc.

EORUMQUE COLLEGIS,  
*Amplissimis, Gravissimisque Viris,*

D. JOHANNI VAN DEN BERG, Jcto, Consulum hoc anno Praesidi, et Amplissimi simul Consensus Curatorum Academiae Actuario,

D. CONRADO RUYSCH, Jcto.

D. ABRAHAMO VAN ALPHEN, Jcto. D. PETRO VAN DORP.

HANC ORATIONEM  
EA, QUAE PAR EST, VENERATIONE

## HERMANNI BOERHAAVE

### DE USU RATIOCINII MECHANICI IN MEDICINA

#### ORATIO.

Qui corporum vires ex mole, figura, et velocitate, vel assumtis, vel deprehensis observatione, calculo aestimant Geometrico, Mechanici appellantur. Quos ipse Artis usus, claraque demonstratae veritatis lux, Sapientibus adeo commendavit, ut aliam omni aequae laudatam seculo, omni aequae comprobata suffragio, temere non inveneris. Miram profecto, et insperato rei eventu humana fere altiozem Sapientiam!

Illa enim certis quidem, sed paucis admodum, iisque vulgatis ubique principii fundamenta debet subtilissimi cujusque et difficillimi inventi.

Postulata ideo Scientiae hujus sordent his, qui fronte prima decepti rebus pretium statuere, vel obscura tantum suspicere solent. Artium vero severissimae successum quisquis spectat, summo eam ingenii cultu dignissimam habet, quia fundamento subnixa tam plano Hominum robur longe supra vires Generis Humani evexit. Ejus quippe effectu nulla datur immobilis moles, licet moturus minimo valuerit agendi momento.

Quare utilitatem ejus omnis civilis, omnis agnoscit militaris disciplina. Hanc aliis artibus necessariam non tantum idonei judices, sed et vanae gloriae ex ignara laude aucupes imperiti celebrant. In sola medicina spernitur, vel praetervisa nihil boni praestare vulgo censetur.

Quod ipsum tamen adeo ego alienum a rei veritate, adeo calamitosum fundo medico habeo, ut dicendi argumentum hac mihi hora aliunde non petiverim. Neque Vestram expectationem, neque mea me vota fefellisse crediderim, si plani sermonis perspicuitate evicero, *Mechanices in Medicina usum esse summum, necessitatem maximam.*

Quae agitant ubertas rei verborum apparatus praecidere videtur. Sed reficit me Vestra in judicando spectata satis sinceritas, quae damnata dudum exordii demulcentis lenocinia ab loco hoc, qui soli veritati sacer, relegavit. Rem itaque ipsam libere exordior; maxime quum severa veritas patientiam quidem et attentionem imploret, gratiam vero repudiet et odia.

Generalem corporis naturam nullos definivisse verius quam Mathematicos tam clarum habeo, ut litem de fide hujus asserti exspectem plane nullam. Quae vero singulari cuique, prout in rerum natura existit, corpori propria sit indoles, ex universali hac Geometrarum idea a priori nullus rite deduxerit. Illa enim ex sola collectione communium nata, secluso accurate omni eo, quod unum ab alio distinguit, justo ratiocinio non dabit conclusionem unquam, quae peculiarem corporis naturam explicet. Ab hac ipsa tamen pendet primario vis agendi, qua unum prae alio corpus pollet; adeoque illa ignorata et haec incognita lateat necesse est.

Ignota igitur haec detegere quisquis amat, ex ipsa re singulari conditiones eruere debet, quae procacem aliter ratiocinii libertatem in indaganda rei indole exacte determinet. Has vero certo nullus novit, nisi ille, qui sensuum experimento observandos corporis cujusque effectus perspexit. Habent sc. hi rationem eorum, quae ex natura propria rei indagandae fluunt; singula ergo horum unam hujus proprietatem, collecta vero simul integram ejus naturam absolvunt, qua sensibus patet.

Quicumque autem ex his ipsis liquidissime prius perspectis, more dein Geometrico ea demonstrat, quae clara et individua sequela inde elici possunt, plura longe deteget, quam sensuum auxilium revelasset unquam. Neque

tamen ipsa haec posteriora vera minus prioribus, neque minus certa, neque minus apta usui erunt.

Praeter binas hasce, tertia non datur, quae peculiarem corporeae cujusdam machinae constructionem reseret, clavis.

Quarum utraque id evincit unum, humanum corpus idem esse natura toti, quam contemplamur, Universitati rerum.

Sensu teste et ratione iudice nil habet praeter caetera eximii, si seria speculatione principia ejus lustraveris, nisi quod ex pluribus, diversisque machinis influxu humorum agitatissimum illud possidemus conflatum.

Conflatum vero hac conditione, ut adunatarum partium effectus sit plures producere, eosque varios valde, motus, qui mechanica plane evidenter ex mole, figura, firmitate et nexu partium inter se, fluunt. Quod confirmatur satis, quoniam solo mechanico motu destructa harum partium una, vel soluta tantum vinculi tenacitate, frustra eundem deinceps effectum speramus. Humanum ergo verum est, quale Mechanici speculantur, corpus; habet adeoque id omne, quod clara hujus specie exhibetur.

Eadem igitur lege, qua mathematicum illud et humana haec machina explicabilis arti geometricae erit; si modo pro datis assumuntur, non quas arbitrium mentis ex infinita possibilium varietate pro lubidine finxit, sed sensuum usu probe compertae dotes ejus peculiares.

Quarum plurimas anatome vario equidem detexit artificio, observando majorum, quibus componimur, partium definitam structuram. Plura in minoribus pulcherrimum detexit microscopii inventum, similem his, majoribusque naturam demonstrans. Sed et liquidorum scientia revelavit multa, quae humorum per vasa nostra circumactorum ingenium, impetum, directionemque determinant. Quare, aut ex omnibus his nihil lege scientiae deduci poterit unquam, aut soli mechanicae in cognoscendo, adeoque et in gubernando corpore humano palma tribuenda erit.

Nihil veri, nihil certi, nihil quod ex usu sit, ex tot manifestis observatis deduci posse, sive ea quis rite expenderit singula, sive emendatissimo ratiocinio inter se comparaverit universa, quis credet, quis asseret?

Languentis certe animi tardum nimis torporem, et ingratum plane pulcherrimorum, quae possidemus, inventorum neglectum, qui sic loquitur, palam facit.

Desidiosi est nihil agendo desperare semper, vel elevare verbis, facere quae forte solus non possit.

Quod si ratiocinandi lege ignota quidem inde illustrari posse concedens quis, mechanicis tamen solis id muneris denegat, aliam det quaeso, quae corporea rectius excutiat, artem. Id qui aggreditur, necessarium est ut statuatur rerum naturam optime explicari per ea principia, quae a quaesita rei natura maxime aliena sunt, et per eos, qui ab una omni Bono probata veri indagandi methodo longissime aberrant. Eo autem ipso tot, tantisque se intricat absurdis, ut, nulla ejus ratione habita, propositum demonstratum putem.

Sed jejuna nimis audit haec convincendi ratio, cujusque remotior ab usu communi vis paucos in assensum cogat! Id verum quin sit, si ex plurimorum captu aestimatur demonstrationis pondus, nullus dubito.

Quidni ergo, vel horum gratia, in liquidissima luce locatam rem ponamus ob oculos; et in ea quidem, qua se omnes pulchre uti jactant, quibus mederi cura est.

Quae aggressurus vel invitatus sane cogor ex historia structurae corporis allegare ea, quae Rhetorum locis insueta plane et inaudita, puritati defaecatae Latinitatis peregrina et barbara, intellectui tamen ipsius rei praeprimis necessaria habentur.

Maximam corporis nostri partem arteriis contextam, harumque sustentatam beneficio vigere, clarius est, quam demonstratione ut egeat. Has canales esse cruorem qui castigant, inque suo dirigunt itinere, quorum maxima circa cor sensim gracilescit cavitas, donec prae tenuitate aciem visus fugiat, vel laniones norunt. Neque minus vulgatum, a corde exortum unum horum truncum explicari in ramos laterales, figura trunci similes, eadem ratione et divisos rursus et decrescentes, hoc tamen artificio, ut truncus recta pergens, in loco divisionis majori plerumque capacitate aperiatur quam rami, qui ad latera trivii hujus porriguntur. Sinuoso autem flexu ita haec omnia vasa curvari, ut cavitatum latera ad infinitos numero, et magnos valde angulos ubique inflectantur, hujusque Spirae gravissimos effectus esse in sanguinem transfluentem, observarunt a paucis retro annis, qui Geometricas subtilitates rebus applicuere Medicis.

Quam mirabili vero, quam efficaci fabrica flexiles finxit hos canales Adorandus nostrae machinae Faber!

Dum a premente intus liquido distendi posse sine lacerationis discrimine voluit, eoque rursum fecit ingenio, ut humorem a dilatatione reciproca cessantem valido cum impetu cogere, se vero in arctiorem capacitatem propria sponte restituere queant.

Ultimos autem arteriae, hosque minutatim divisos fines in membrana, ut firma basi, ordinari, ibique per fistulas in mutuos occursus emissas hiare inter se, ante Malpigiū viderat nemo. Ille primus ambages resolvit et mille viarum dolos, quos pulsa in hos Maeandros liquida pererrant.

Sed, o admirabilitatem maximam! o mechanismum pollicis divini!

Tanta enim accuratone digesti ramuli aequali hic viae latitudine porrecti et laterali progenie orbi, primordia venarum, Lymphaeductum, horumque sinus mutata constituunt figura.

Haec ea sunt, quae oculi acies, microscopium, vasorum in vivis ligaturae, hydrargyrium mortuis injectum, contemplatio figurae morbosae, comparatio denique brutorum, piscium, insectorum et plantarum detexit.

Praeter illa in arteriis ipsis deprehenditur nihil, falso finguntur plurima.

Maxima ergo corporis, eaque efficax valde ad vitam pars, Mechanica descriptione, canalis est conicus, elasticus, inflexus, divisus in similes minores eodem trunco ortos, qui ultimo circa vertices cylindricos retis structura in se mutuo patent.

Id si verum, quod omnium profecto verissimum, nonne sequitur omnes effectus quos sanguini arteriae praestant, tantum pendere ab hac earum fabrica?

Nonne et hoc rursum liquet, omnes ergo illos hinc solummodo petendos, et demonstrandos esse?

Vos nunc, qui justī sedetis hac in causa Iudices, obtestor! Quis ea, quae vel hinc duntaxat oriuntur, verae demonstrationis ordine expediet?

Solus ille, qui figurarum contemplationi, et oscillatoriae virtutis calculo assuetus, callide videt, quam multa, quam gravia ex hisce solis demonstrare queat; solus ergo Mechanicus.

Sed patiamur abripi nos admirabilitate hujus arteriae, brevis certe levisque attentionis praemium Scientia erit totius fere humani corporis.

Illa, ubi depictum antea rete constituit, tubos emittit cylindricos adeo arctos, qui rubras cruoris sphaeras ore suo capere nequeant; unde his recipitur tenuior tantum et excolor pars sanguinis.

En veram vasis lymphatici ideam!

Eadem rursum ibidem loci arteria recto porrigit decursu truncum, qui emissis Lymphaticis amplior crassiorem, rubrumque sanguinem, sero liquidiori orbatum vehat.

Ecce venarum genuinam originem!

Quarum angustam primo cavitatem mox ampliorem reddit infusa ubique nova per laterales fistulas liquidi venosi, Lymphaticique moles, prorsus ut novum conum, similem arterioso, eique ad vertices oppositum repraesentare discat.

Perfunctorie tangere quae debui, vasa, vah quae, quamque pulchra in recessu recondunt!

Arterias, Venas, Lymphaeductus, descriptumque horum apparatus plano affigas membranaceo, huic nervos intexas, villosque applices elasticos, tum convolvas in glomerem, habebis glandulae fabricam.

Quam quoties cogito, uberrimam mirandorum effectuum matrem contemplor, simulque ineptissimi cujusque figmenti falso celebratam sedem.

Tu vero inanes Chimaerae latebras aperiens, Tu maxime Malpigi! Suprahumana industria, incredibili labore, atque cautissima perspicentia, simplici hoc artificio absolvi ejus compagem, plus quam demonstras!

Quanti vero momenti demonstratio! glandularum enim aggregato totum fere corpus constat!

Cerebrum Hippocratico oraculo glandula penicillo Malpigliano depingitur ut ordinata ex arteriis, venis, receptaculis, emissariisque nervosis moles. Jecur, Lien, Renes glandulis fiunt adunatis.

Ipsa humoris genitalis officina artificiosus canalium cylindricorum glomus. Ipsum Embryi dolium, ipsa foetus aula, ipse candidi nectaris, quod recens nati bibunt, promus condus hac glandulosa operantur arte. Ossa ipsa et membranas eadem fere compaginari structura quis dubitat, nisi cui cedro digna et aere scripta Malpighii, Kerkringii, Havertiique nondum illuxere?

Lacertis tandem examinandis mentem applicuisse rogo ne poeniteat! Huic se labori quicumque non subduxerit, nae ille subtilissimae Mechanicae artis efficacissima instrumenta clarissime reperiet! Musculus enim omnis nonne ex minoribus similibus componitur? Ultimus vero quid, quaeso, villus est? Non aliud certe, quam nervosi et angustissimi canalis dilatata, simulque attenuata pellis canali, unde oritur, cavum formans amplius soloque inflatum spiritu.

Hujus vero quam immensa sit machinae potentia, scite novit, qui hydraulica Mariotti experimenta contulit Cartesii Mechanicis.

Pulmones contemplemini, diversae a caeteris structurae, saccos habebitis elasticos, sphaeroïdeos, qui abscisso conii vocalis appenduntur vertici; horum superficies maculis retis sanguiferi ornatur, et, quod mira hic arcana velat, incilibus fere caret lymphaticis.

Ergone, cogitatis forte, admirabilis illa, illa tam artificiosa Hominis machina simplici adeo perficitur apparatu!

Certe non fit alio.

Habeat hanc, qui volet, ob simplicitatem, vilem!

Mechanice Organum id laudat, ejusque Auctorem celebrat sapientissimum, quod quaesito effectui producendo aptissimum, simulque inter omnia, quae eundem praestare possent, simplicissimum sit.

Quid tandem ex hisce concludemus?

Corpus nempe humanum machinam esse, cujus solidae partes aliae sint vasa liquidis coërcendis, dirigendis, mutandis, separandis, colligendis, et excernendis apta; aliae vero instrumenta mechanica, quae figura, duritie nexuque suo vel fulcire alia, vel definitos motus exercere queant.

Peccabo in patientiam vestram vestrumque decus, si cuncta examussim explico. Id unum bona audietis cum gratia: Hippocratem cum integro, quem sequutus est Babyloniorum, Ægyptiorum, Graecorumque choro, cum integra, quae eum sectata est Grajorum schola duo haec, non alia detexisse.

Arabas omni industria, omni anatomes cultu tertium addere potuisse nunquam.

Instauratorem anatomes consulite Vesalium, hujus aemulos Eustachium et Fallopium; tum immortales inventis Harvaeum et Malpighium; et hos, qui singuli novis antiqua emendarunt Asellium, Pecquetum, Bartholinum, Dathirium, Bellinum, Glissonium, Wharthonum et Willisium; his jungite juxta leges mechanicas anatomicos Lealem et Louwerum, quique in abditissima penetrarunt, Hokium, Pouwerum, Leeuwenhoekium, deprehensuri estis omni arte, omni artis adjumento bina, quae dixi, nec inventa alia.

Cur alia ergo fingere precario quempiam patiemur, nobisque imponentem in aeternum verba dare?

Ubi Elementis, qualitatibus, formis, causis chemicis, animatis, metaphysicis, amoris et odii affectibus, ubi, inquam, tot fabulis locus, causa, necessitas?

Nulla profecto vel vestigium sui hic figmenti secta invenit.

Soli Mechanici suum objectum hic agnoscunt, neque aliud in toto, qua solidum est, corpore quidquam datur. Ille ergo soli audiendi, horum effata sola consulenda, eorum principia sola imploranda, horum methodus sola adhibenda, ubi de effectu organi perspecti quaeritur.

Sola erit firma, quae a perito in his Magistro profertur, demonstratio.

Agite o Viri, quis dicta forte displicent, quid facit in oculo vel simplex illa figura corneae, quid aquae, quid crystallinae lentis, quid vitrei humoris determinata superficies et definita spissitudo?

Enarrate quid auris externae Helices, quid meatus auditorii arctior et inflexa in medio, latior et porrecta ad utrumque extremum via faciat ad exceptionem, directionemque radii sonori?

Membranae Tympani tenuitatem, figuram ejus ellipticam versus interiora ossis petrae convexam, hujus mutabilem in varias curvaturae figuras formam ope affixi et agitati suo musculo malleoli contemplemini, et dicatis, quis effectus constantissimae hujus tamque operosae in vilissimo quoque

animalium fabricae?

Nunc daedalei labyrinthi, conchæ, vestibuli, duplicis in cochlea turbinata spirae, loci ovalis et rotundæ fenestræ, tot inquam miraculorum mechanicorum, quae durissimae hic insculpsit petrae Divina manus, date rationem.

Sine profunda Mechanices Scientia nil veri vos intellecturos, nil boni proluturos aliis, utamini quolibet adminiculo, audacter affirmo.

De solidis, quae dixi, pauca haec sufficiant; urget ratio ut nonnulla de fluidis subnectam.

Haec enim illa sunt, quorum motu vita, quorum libero per vasa fluxu sanitas absolvitur.

Illorum autem naturam exacte capit, qui minuta novit corpuscula et agitata, quorum congeries fluidum constituit. Eorum unum si spectatur, rationem habet solidi, adeoque mole, motu, figuraque quidquid agit, efficit. Quare effectus, quos una fluidi pars producit, soli Mechanico patent per experimenta indagandi.

Quod ex ante dictis quum sponte fluat sua, latiori sermone non explano; unum hoc pronuncians, non eo usque hactenus provectam hanc liquidorum scientiam, quae usum rei praestet idoneum.

At si totam fluidi molem simul spectamus, gravitas ejus fluorque communes deprehenduntur sublunaris liquidi proprietates. Virtus vero elastica, ponderis, spissitudinis, fluiditatis, nixusque in contactum gradus varii, momentum impetus quo fertur, et itineris directio palmaria sunt quae unum ab alio fluidum distinguunt. Horum vero omnium tanta efficacia est, ut infinita, quae sanis contingunt, non aliunde oriantur.

Quamobrem quicumque ex praecepto scientiae rite haec enucleat, opus is absolvit summae ad perfectionem medicam necessitatis.

Sed fidem vestram! quis proponere, explicare et demonstrare vim eorum poterit, qui Hygrostatices, quae subtilis Mechanices pars, rudis est?

Haec illa est Aquilegum scientia, quae ex assumtis, modo quas descripsi, affectionibus ratiocinia nectens geometrica utilissima et usui apta reperit Theoremata.

Haec, neglecta causa physica, et cujusque particulae, quae fluit, singulari natura, ex his, quae sensibus per eventum in tota mole patent, quam gravia, quam utilia vitae, methodo invenit Mathematica?

Evolvat Archimedis, Cartesii, Stevini, Borelli, Mariotti, Hugenii, Neutoni, et Bellini scripta, qui re, non verbis, convinci cupit.

O quam necessaria feliciori Genio, ut revelentur, reliqua sunt in Pulcherrima hac Speculatione!

Hanc utinam excolant! utinam exhauriant! utinam nobis aperiant Viri Mathematicae docti!

Ab hoc Eorum labore, quo generales liquidi effectus luce illustrarent mathematica, brevi tempore plus maturi in horto medico fructus exspectare licet, quam ab omni eo, quod aliunde in hunc congestum hactenus.

Taedet quippe pudetque ineptiarum, quibus seriam prae caeteris Artem ridiculam fecere, qui Mechanices imperiti vim liquidorum humanorum explicare conati sunt.

Et palam affirmo, vitalium actiones humorum scire posse neminem, qui Aquilegum regulas ignorat.

Quae dum libertate Medica firmus assero, jurgii hic illaturos causam praesagit animus eos, Qui, nescio qua gratia, ab Hermete nomen sibi, sectamque condunt.

Egone ex universali hac liquidorum doctrina deduxerim ea, quae singulares eorum virtutes absolvunt?

An fermenti stabiles motus, diversorum liquidorum ferventes conflictus, putredinis spontaneae mirabiles effectus ex Mechanicis explicuerim unquam?

Talia objectans, eorum, quae dicta, memor, paucis, quae dicam, animum adhibeat.

Mea enimvero sic est ratio, justa, vel secus, vestrum sit iudicium.

Ex experimentis Chemicorum historiam haberi posse valde limitatam

singularium eventorum, quatenus in circumstantia definita sensibile quidpiam producant.

Necessaria ergo quam maxime est Medicinae haec Ars, dum observatorum Sylvam largitur et observandi praebet optimum compendium.

Data enim exhibere, horumque definire conditiones valet, regulas autem ratiocinandi ex his Chemia dabit nunquam.

Ne tamen vel sic nimis, ut solent, se efferant, qui unius Chemiae cultu omnem Medicae Sapientiae thesaurum se possidere vani jactant!

Enimvero plura in nobis, sani vigeamus, vel langueamus aegri, fieri ex communibus illis liquorum proprietatibus, quas sibi sumserunt expendendas Geometrae, quam ex insitivis, dubiis, et arte Chemicorum factis plerumque, pervulgato palam documento est.

Aqua naturae ariditatem alter corrigit, Falerno alter quotidie venas inflat; fructibus hic, Cerealibusque parvo assuetus famem explet, et sustentat Spiritum, ille carnibus, piscibus, terra natis, et omni condimentorum varietate Apitiana onerat ventrem; alii blando et insulso fere victu aluntur, alii salitis, acidis, et acribus quibusque intestina stimulant.

Multiplex adeo assumtorum varietas vitam tamen sanitatemque plures per annos protrahit in iis, qui tamen diversis humores suos saturant corpusculis.

Liquido argumento magis communi fluidorum naturae Mechanicis explicatae, et in ipso corpore vi viscerum productae, quam singulari cujusque particulae virtuti, actiones vitae deberi.

Si aurea Verulamii de vita et morte monumenta, si liberae Hippocratis et Celsi de victu sanorum leges, si usus non satis id confirmat quotidianus, omni dignissimum fide Louverum, sincerum mehercle et defaecato iudicio sagacem Virum vobis citabo.

Hic enim, immani cruoris jactura exsanguem, jure carni solo ingesto, venis recepto, per has fluente, imo colore nec mutato effluente per vulnera, revixisse Juvenem testatur.

Sed quid verbis opus in re clara?

Ad Vos ego provoco, Vestram appello fidem Clarissimi Viri Medici, Quorum sapientia huic Coronae venustatem conciliat, Quorum salutari dextra incolumis huic Urbi praestatur sanitas!

Nonne incumbit nobis, dum aegris Medicina fit, vel millies fluida inspissare, resolvere coacta, stagnantia movere, compescere dissoluta, diluere crassa, leviora solidare?

Dum rarissime ad pugnas Salium, flammam Sulphurum, vel tectum Mercurii genium attendere cogimur.

Ipsi certe illi, qui mera ubique Chemica crepant, cum morbus manum poscit, repudiatis suis, sedulo, quae laudavi, inquirunt.

Si ergo his fluidorum proprietatibus tot debentur, si has omnium suffragio optime excusserint Mechanici, patet ipsa fluida vitalia ut cognoscantur Medico, auxiliis egere Mechanices.

Spectate jam effectus, qui ex fluentibus per vasa liquoribus oriuntur, evidentior longe fulgebit Veritatis Mechanicae potestas.

Si enim liquida descripta in vasis depictis quiescunt habebimus cadaver.

Ubi vero liber his humoribus per canales conciliatur motus corpus vivum cernimus.

Sermoni fidem quisquis meo negat, suis ut oculis credat oportet.

Mollem consideremus hominem, qui salientis de vulnere cruoris spectaculo perturbatus in animi cecidit deliquium.

Mortuum videmus; sed qualem? in quo cuncta solida, quae sanitati sufficiunt, adsunt et liquida, solus abest liquores in gyrum agens motus.

Huic quacunque demum ope concutiantur nervi, ut motrix cordis materies fluat, redit statim, depulsa tristi mortis imagine, laetior vita.

Vita non modo; calor, rubor, agilitas, cogitatio, vitalis omnis, naturalis et humana simul redit actio.

Quid hic fermenti, quid effervescentis, quid salis pugnacis, quid olei spiritusve nascitur aut perit?



Excepto motu, neque additur, neque demitur quidquam, vita tamen amissa ipsa redditur.

Sic aves et insecta constricta frigore hyberno, lenis statim in vitam excitat tepor.

Sed veritatis qui convictus viribus, ob ipsam argumenti vulgatam claritatem, certis saepe diffidit.

Rariori ergo ut spectaculo firmetur, quae nimis noto patuit satis exemplo fides, in Hokii vos officinam invitat oratio.

Destructo thorace mortuum animal inflatis per follem Laryngi applicatum pulmonibus cito reviviscit.

Attoniti miraculo vitae tam mechanicae ad magnum cito adeamus Glissonium; en ille impulso ope vesicae in venas liquido mirifice vitales actiones aemulatur in defuncti dudum hominis cadavere.

Omnia haec in specimen allata, infinita enim dici possent, an non evincunt satis, cuncta fere, quae vitam, sanitatemque nostram faciunt, vel sequuntur, pendere a motu illo, quo humores per vasa mutua plane moventur et agunt vicissim agitatione?

Cujus effectus, et leges, quum soli rite intelligant, explicent, et demonstrent, in Pneumaticis atque Hydraulicis, Mechanici, concludo cuncta ergo rursus disciplinae subjecta haec Mechanicae.

Hic vero ille est locus, ubi mire se jactant, ubi serio triumphant fermentorum Patroni.

Si fluor liquorum liber per vasa vitae causa, ergo ajunt prima motus ratio in fluido et ab eo; itaque ab interna huic agitatione, eaque forti valde et constanti satis, qualis non nisi in excitatis fermento liquidis reperiunda datur.

Sciunt autem Hi, primam moti in Embryo liquidi a parentibus semper derivandam causam, eam fotu matris continuari dum ab ea pendet foetus, dein vero ab ipsa fabrica perennare solidorum.

Admirabilem auricularum Cordis ad ejus Thalamos structuram, nexumque qui speculatus est, et qui hinc necessario sequuntur, alternos influentis et expulsi liquoris motus a corde in arterias, ab his in cerebri medullam, processus, nervos, musculosque et venas rursus, non quaeret vitae continuatae rationem extra ipsam virtutem viscerum Mechanicam.

Facile enim illi erit, perspicuitate certe Mathematica demonstrare, unicum pulsum cordis datum in corpore sano sibi continuando esse causam.

Longe minora numero, longe simpliciora sunt, quae vitae incolumitatem praestant, quam noster fingit animus.

Leviores longe sunt rerum ingestarum in nobis mutationes, quam vulgo creditur.

Minus compositae, quam ipsi putamus, vitae humanae causae.

Si exacta structurae esset cognitio, si sensibilis probe nota esset humorum natura, doceret cito Mechanice ex simplicissimis fluere principiis, quae ignota maximam nunc pariunt admirationem.

Dicti veritatem tam paradoxi uno ab exemplo discere licebit, ut constet quam simplici negotio et Mechanico plane maximae quae habetur omnium operae mutatio in nobis fiat.

Pars pellucida animalis vivi microscopio aucta claro docet spectaculo, cruorem solo cordis pulsu in extremas trudi arterias, ibi elastica arteriae contractione retropelli aliquantulum quo momento ictus cordis cessans, ejusque valvulae concidentis, regressui spatium laxant.

Reciproco hoc impulsu et repercussu varias mole partes cruoris applicari ubique ad diversa capacitatis hiatu oscula, intra haec recipi, vel inde repelli, tam clare, quam coelum hoc contueri est.

Tum solo hoc artificio secedere sanguinem in diversa colore et tenuitate fluida, mox in venis iterum permiscenda eadem claritate cernitur.

Id vero Chemicorum conflictuum perito evidens ipsi oculi aciei apparet, simplici impulsu aliunde dato, et vasis elatere, sine ullo fermenti signo omnia haec fieri.

Defixus saepenumero in speculatione hac anceps mihi haesit animus, an Spirantis cerneret animalis partem, an vero incilia meditatione summi Mathematici excogitata, manu peritissimi Mechanici affabrefacta, per quae

liquores duceret, secerneret, misceretque absolutae artis consummatione perfectus Aquilex.

Tandem vero si periculum capere juvat, an ex simplicibus et indubitatis sensuum experimentis demonstrari queant per Mechanicos illa, de quorum intellectu ante paucos annos nulla spes, Geometrico parta labore in usum exempli citare decet.

Perpendamus, quae docet, dum Mechanicen Medicis applicat Rebus, Borellus.

Evolvantur, quae ex hujus Schola sapiens, eisdem usus principiis, et Malpighianis inventis fretus Oedipi instar extricat Bellinus.

Tum quae illorum laudato excitatus labore, Orbi erudito Problemata proposuit, demonstravitque, nobile quondam hujus Lycaeii ornamentum Pitcarnius.

Scheineri, Cartesii, Hugenii de oculo, Kircheri, Schelhammeri, et Morlandi de aure et auditu, scrutemur demonstrata.

Constabit an prosit Medico Mechanice!

Apparebit quid sperandum sit, si ejus a peritis Medicis invehitur in Medicinam usus, si in exercitatione hac pergatur tamdiu, quamdiu patientia humana tam inepta sectarum molimina in disciplina Medica tulit.

Haec autem vera esse, et usum habere in Medicis Mechanicen, quamdiu de Theoria agitur, consensus erit forte facilis, tamen ne hilum bonae frugis ipsi Artis exercitio afferre, pervolgata objicitur querela.

Quae quidem speciosa hac distinctione prolata, qui consistere queant simul, satis non video.

Neque enim aliam hos intelligere Theoriam credo, nisi eam, quae ex proximis causis clare docet, quae sani hominis vita sit.

Quod si, ut oportet, admittitur, sequetur Scientiam hanc noscendis, curandisque morbis auxilia suppeditare optima.

Causas enim qui recte novit perfectae sanitatis, ille, quoties hae deficiunt, egregie ipsius defectus, id est morbi, originem rationemque comprehendet.

Qui autem causam aegritudinis proximam clarissime vidit, maxime is idoneus, qui ei occurrat, est habendus.

Eodem sc. modo se res habet ac in horologio, cujus si deviat index, errores imperitus notare, at corrigere ex arte nemo potest, nisi ille, qui requisitae structurae gnarus, vitia partium hinc et remedia invenit.

Ita nulla lucis scintilla in Theoria Medica micat, ad quam in faciunda Medicina facem accendere non possit re peritus Artifex.

Adeoque qui Mechanices in Speculatione, ille ejus in usu praestantiam fatetur.

Docet hoc antiquitate nobilissima et usu ea artis pars, quae ab eo quod manu medetur nomen gerit, quae sc. an inventis Mechanicis carere queat vestra sit aestimatio.

Instrumenta, quibus vitia emendat, quis felicior, quam Mechanicis imbutus Medicus inveniet?

Tenuis, quae volitare putantur ante oculum, imagines, dum Matheseos imperiti ut oriturae in aqueo humore suffusionis primordia tractant, acerbis saepe erodunt tenellum et prava arte oculum.

Harum vero sedem reticulo, causam arteriis Geometrae consilio dum reddit Willisius, dum demonstrat Pitcarnius, quam mutata est medellae facies?

Abacto externorum mordaci apparatu, misso sanguine, et solventi medicamine tuto tollitur, vel et negligitur malum.

Oculi error a radiis male collectis quam inepte tentatur collyriis vel potus medicati haustu!

Quam feliciter levatur perspicillis, quae cuique vitio singulari propria regulae definiunt Hugenianae!

Opto ut, qui omnem Mechanices usum ex praxi proscribunt Medica, intelligant prius vel unius Hugenii de emendandis visus vitiis Commentarios.

Illustre enim illud Batavorum lumen, assumpta ex anatomicis oculi fabrica, et una morbi, cui succurrere vult, proprietate, mox ex meris Mathematicis reperit auxilium, quod usum praestat huic tantum malo, cujus proprietatem

assumta problema limitaverat.

Intacto oculo, morbi effectum tollit; et inemendabilem in eo defectum vitri figurati supplemento farcit.

En pulchra, in quibus, ut in speculo, spectatur Geometrarum in medicis Mechanice ratiocinandi methodus, usus et successus.

Hac via si pertractabunt omnia, ut revera sensim poterunt, habebitur tandem certior, neque obnoxia figmentis, neque omni mutabilis hora, sed aeterna scientia medica.

Non est porro quod dicat quis, nondum confirmari vitia fluidorum adeoque internae aegritudinis causam, hujusque mitigationem auxiliis subijci Mechanicis.

Vel enim an impossibilis fructus hic, vel an necdum acquisitus quaeritur.

Si posterius, iniquos habemus et molestos Censores.

Quis aequo ferat animo peti, ut pauci Mechanici, qui Medicis a paucis temporibus vacarunt rebus, ea jam perfecerint, quae tribus annorum millibus junctis viribus alii omnes vix potuerunt inchoare?

Imo id omnino impossibile: quum enim Mechanicis Medicis applicandae lex exigat, ut structura solidorum, natura liquidorum, effectus horum sensibiles in sanitate et morbis inserviant pro datis, quis tam absurdus, qui operosissimae Artis fastigium in ejus rudimentis quaerat.

Si autem judicat quis nunquam vel quidquam hac via perfectum iri, is, rogo, perpendat, morbi a fluido orti causam pendere *ut plurimum* a vitio ejus per vasa transfluxu.

Hoc Hippocratica, si componuntur Sanctorianis et quotidiani usus experimentis, docent.

Fluxus vero impedimentum internum vel languori virtutis impellentis, vel contractioni vasculorum convulsivae, vel liquidis copia, motu, spissitate, aut tenuitate peccantibus adscribet *plerumque*, qui vitae, sanitatis, morbi, mortis et cadaverum phaenomena comparavit sedulus.

Quin adjuncta, quibus morborum miseriam lenimus aegris, ea prodesse gratia *inprimis*, qua dicta malorum capita auferunt, attenta nos docet contemplatio.

Aurea comparentur Sydenhami observata demonstratis de missione sanguinis, stimulis et Villo contractili Bellinianis, et, postquam Mechanica plane ope juvare vulgata remedia constat, spes concipietur sensim demonstrandi regulas subire posse et vires eorum et applicandi rationem.

Vix enim me contineo, quin, praematurus forte, pronunciem simpliciores esse, et magis Mechanicas morborum maxime compositorum causas, quam ullus Medicorum cogitat.

Unius enim partis minima et simplicissima labes unionis necessitate et contagio totam saluberrimae Machinae vim subito pervertit.

Tenuissima acu, eaque ex purissimo Chalybe pungatur tendinis vel nervuli fibrilla in corpore sanissimo.

Heu quam dira ex vili vulnuscule tantillae particulae malorum, heu quam multiplex cohors!

Dolor, rubor, tumor, ardor, pulsatio, febris, sitis, delirium, convulsio et horrenda tristis tragoediae catastrophe mors.

Spina, levisve festuca membranoso infixata loco eadem brevi parit.

Et miramur venenorum spicula, pestis lanceolas, vel salium acumina similia peragere?

Quin solo motu externo quam mirae rerum mutationes in corpore sano!

In gyrum agatur, vel jactetur maris fluctibus scaphae insidens insuetus: Quid fit? vertigo, pallor, nausea, vomitus, anxietas, mille morborum aerumnae, mille fluidi vitalis et incredibiles mutationes a solo motu oriundae.

Qui ergo humores integros manere novit, quamdiu vi canalium conquassati propelluntur, qui stagnantes hos in calido, humidoque loco morbosos reddi statim et trahere sincera scit, qui ex uno simplici malo infinita alia statim sequi animadvertit, facillime perspiciet exspectanda ad haec a mechanico medico promptissima tandem auxilia: ex causis enim impediti floris, regulis superandae resistentiae, restituendi motus elastici, augendae virtutis cordis

collatis cum morbi phaenomenis quid non inveniatur tandem?

At enim vitam, morbos, sanitatem in nobis ex principiis fluere non Mechanicis mentis docet in corpora potestas. Frustraneus ergo tot irritorum conaminum labor! Vana supervacaneae Mechanicae speculationis spes.

Talia aggerens utinam rideret securus, neque communem ignorantiae calamitatem eadem deploraret querela!

Quis enim miri hujus commercii vim invenire potuit in aliquo, quod corpus constituit vel mentem?

Sciat tamen, virtutem cogitationis, simulac in corpus influit, totum quod in eo producit, facere corporeum, adeoque legi Mechanicae obediens.

Quid refert causam mutationis primam non esse Mechanicam, quum hac insuper habita, effectum, qui corporeus, cognoscere, excutere, atque dirigere Mechanico detur Medico; quum hoc scopo sufficiat?

Crescit nimium, pauca dum tangit leviter, Oratio.

Unum, quod palmarium jactant, quibus alia quam nobis mens est, ne declinando subdole evitasse me suspicentur, diluendum judico.

Philosophos clamant et Mechanicos, ubi Medicae arti exercendae admoti fuere unquam, sinistro semper eventu repulsos fuisse. Disputatione non esse opus, quum artem horum Medicis nocere, re constet et experimento.

Quae verissima esse, si hos arguunt, quos in scholis superbus philosophi titulus effert, docet historia, docent, quae de rebus conscripsere medicis, volumina.

Dum enim omnium prima rerum principia ex propriis creare cogitatis satagunt, dein vero ex iis, quae ipsi figmenti subtilitate prius in illis posuerant, peculiarem corporis cujusque naturam declarare, errasse ubique docet ipsa, quam commendo, Mechanices ratio.

Applicari rebus nequit, quam ratiocinio fecerant, conclusio, nisi prius illa, quae pro fonte argumenti liquido assumserant, rerum singularium, quae natae sunt, principiis esse eadem foret evictum.

Haec vero, quum infinita, eaque semper diversa esse queant, patet casu veritatem nunquam sic detectum iri.

Quod si considerassent sedulo, tam Scholastici dicti, quam plurimi Mechanicorum Cartesii sequaces non fuissent arbitrati id sibi datum negotii, ut ex fictorum principiorum praeceptis corpus humanum regerent, sed ut ex his, quae observatio prius docuerat hominem constituere, ipsa dein artis elementa applicata Mechanica conderent.

At si Mechanico, quem jam descripsi, Medico hanc dicunt contumeliam, exempla ignominiae citent exspecto.

Non equidem, qui nostri capit animi sensum, negabit ullus, accuratissimum Mathematicum pessimum forte futurum Medicum.

Quo enim talis pertinet Oratio?

Non in Mechanico Medicinae, in Medico vero Mechanices peritiam desidero.

Usu peritum Medicum experimentis medicis defecto Mechanico in morbis curandis qui post habet, insaniet.

Sed aequa instructorum experientia hunc promovendae arti meliorem, qui Mechanicis callet prae alio praeceptis, id affirmo, id demonstrandum sumserat Oratio.

Ne vero, quod ubique contigisse doleo, sinistram, quae dixi, interpretationem subeant, age describam compendio speciem illius, cujus imago animo obversatur meo, Medici.

Depingitur ille, ducendis studii Medici primis lineamentis incumbens, tanquam affixus Geometricae contemplationi figurarum, Corporum, Ponderum, Velocitatis, Fabricae Machinarum, et, quae inde oriuntur in alia corpora, Virium.

His dum mentem exercet, claro discit praecepto et exemplo, liquida ab obscuris, a falsis vera discernere, et ipsa judicandi tarditate animo conciliare prudentiam.

Ita postquam nudas simplicium corporum actiones expendere, has ex veris, clarisque causis deducere novit, maturum habet ingenium, qui fluididatis, Elateris, tenuitatis, ponderis, tenacitatisque in fluentibus proprietates ab

Hydrostaticis cognoscat.

Jam animi vigore robustior fluidorum vires in machinas, harumque in illa rigore addiscat Mathematico, Experimentis confirmet Hydraulicis, et Mechanicis, Chemicis illustret, Ignis, Aquae, Aëris, Salium, et aliorum maxime similium corporum ingenium speculatus et actiones.

Altera mox tabulae facies sacris jam Medicis admotum exhibet.

Oculum ibi Geometriae luce acutum ad incisa cadavera, ad spirantium corpora brutorum aperta tacitus circumfert.

Jam vasorum structuram, figuras, firmitatem, ortum, fines, nexus, curvaturas, flexilitatem contemplatur et elaterem.

Excitatus spectaculi mirabilitate, mox conspecta ad eum, quo jam pollet cognito, Mechanismum applicans, abditas detegit harum partium virtutes.

Quam variis, pulchris, utilibusque utentem cernimus auxiliis, quibus recentiorum industria pmoeria extendit anatomes.

Aliorum certe durissimo parta labore inventa in suos usus dum accommodat, claram sibi sistit humanae fabricae imaginem.

Cui fluidorum vitalium nectit notitiam; hanc Anatomicis, Chemicis, Hydrostaticis, ipsiusque microscopii adjumentis in vivo corpore, et extra illud examinat; tum mox accuratissimam omnium sensibilibus, quae in sanitate contingunt, historiam omni arte, undique comparatam evolvit.

En suis instructum datis, ut sanitatis Theoriam scribat!

Ex his singulatim perspectis, expensis, comparatisque inter se, auxilio Mechanicis, severitate ordine et prudentia Geometrica, lento gradu festinans elicit, quae in his comprehensa sensibus abduntur, rationi patent.

Sic proximae cujusque effectus causae indagantur, harum natura ex indole collectorum, cognitorum et comparatorum phaenomenon indagata perficitur, firmatur, et sensim ex horum aggregato consummatur tandem.

Quid speratis futurum, qui ad hanc normam sua exigit studia?

Nonne immutabilis et coeva erit haec scientia ipsi naturae humanae, ex cujus sc. elicitur indole, in qua fundatur tantum?

Nonne certa erit, quae innixa iis, quae omnes pari agnoscunt evidentiis, castigatissima caute procedit fide?

Nonne definita satis et ipsis erit rebus utilis, quae certis, claris, et sensibilibus corporis humani proprietatibus solum debet causae proximae, quaeque nostro subjicitur imperio, inquisitionem accuratissimam, idque via, qua erratum nunquam?

Lento crescet, fateor, et occulto adolescet augmento, quilibet tamen vel minimus progressus gradus ad altiora firmus erit, et novi incrementi immutabilis causa.

Hoc autem labore defunctum, adspirantemque ad metam jam videte in ultima picturae parte adumbratum.

In ipsa nunc adyta se penetrat, in ipsa Æsculapii penetralia!

En Tabulas Hippocraticas, fidaque Grajorum, quae scrutatur, scripta!

Jam ex abundantanti Medicorum Thesauro colligit quidquid sparsum haeret mellis medicati.

Hic incisa, quorum notaverat morbos, ruspatur cadavera; illic in brutis arte factas aegritudines observat; nunc omnia morborum effecta et remediorum ipse experimento colligens; nunc eadem ex optimis Auctoribus addiscens; tandem cuncta digerens, expendensque inter se componit, et his, quae Theoria demonstravit, comparat, unde historiam denique curationemque morborum firmet.

En Vobis ultima manu absolutam consummati Medici imaginem!

Hanc Mechanicis egere auxiliis ut perficiatur, satis, ni fallit me animus, evictum.

Huic consimilem me reddere, ad hanc me componere studui, ut medicinam feci.

Ad hanc polire eorum, qui meae se committunt disciplinae, ingenium summa ope enixus sum, dum in Vestro hoc salutis fano ex Auctoritate vestra Musagetæ Illust. medicinam docui.

Eam, dum Dei munere spiro, ambitiose colere non desinam.

Non credulitate stulta, non stupore ignari vulgi, non verbosis strophis, sed clara demonstrationis fide Artem, cui nostra credimus capita, commendare affectabo.

Vos Optimi Juvenes, qui illi Scientiae consecratis pectora, a qua incolumitatem sperat salutis Humanum Genus, Vos Picturam. Medici contemplati primis miremini ab annis.

Ita Vos agite rem vestram, ut lineamentis, coloribusque hujus imaginis formosi, salutare hominibus audiat genii!

Nulla est, quae pulchriora laborum praemia Cultoribus persolvit, quam Medica Sapientia.

Non alia est, quae Mortalibus gratiores, magisve utiles vel necessarios reddere vos possit.

Excitemini o generosae mentes! Excitemini pulchritudine Artis, cujus effectu beatus his in terris nemo carere poterit!

Nunquam rei difficultas calidum vestri animi retundat impetum!

Ardua est, fateor, quae ad Panaceae ducit delubra, via.

Sed complanavit hanc improbus aliorum labor, superarunt praerupta, perrupere fortes, Vos alacres sequamini!

Hos habetis in hac Academia ad Medicinam Duces, qui ditiores longe Vobis explicent thesaurus, quam Epidauriae olim columnae, Pergamenae tabulae, Cnidii parietes, vel folia largiebantur Coaca.

Habetis, qui secreta quaeque Matheseos arcana incredibili perspicui sermonis facilitate revelet, rebusque applicare Medicis praemonstret, Volderum.

Optimorum sane sententia natum ad haec sacra, Nostroque encomio longe majorem Virum!

Cujus disciplinae liberali infinitum me debere grata memoria et publice hic agnosco, et dum huic constabit menti sanitas ingenue semper Ego et candide meminero.

Horum ergo dum lego vestigia, si quid vobis adjumenti praestare posse censeor, praesto sum qui ita me geram, ut ex vestro meum me comparare commodum opere ipso testari possim.

Vobiscum Veterum placita, Recentiorum et propria, si quae sunt, observata undique indefesso labore colligere, ex his laudatae Mechanices arte doctrinam Medicam condere non desinam, quamdiu in hac versanti slatione, vires dederit Deus!

Agite ergo Commilitones Studiosi totus quod commendavit sermo, felici hujus anni Academici auspicio inchoare et perficere certatim tentemus opus!

Vestra frequentia incitatus docentis vigor id aget, ut, qui naturae facultate et eruditionis plurimis postponendum me sentio, sedulitate certe cedam nulli.

Laboris autem summum habebō pretium, si vestro applausu, Vobis meam profuisse diligentiam, orbi constet, si vestri in hoc Athenaeo studii felicitas claritate famae plures alliciat.

Hoc enim votum illud est, *Illustrissimi Curatores, Amplissimi Coss.*, cujus successu alacer, rerum Vestro auspicio, Vestra in Academia gestarum rationem Vobis reddere audebo.

Unum hoc dignum habebō, quo Genium Vestrum adorem, donarium.

Omni sic adulationis fuco deterseo, sincero certe animi candore referre me putabo, quas Vestrae benignitati animus debet, gratias!

Docendi enim admotum muneri, duoque jam meritum stipendia, exploratum adeo, honorificis promissis et nova liberalitate nec opinantem excitastis denuo.

Ego, ex multis, quas in Vobis veneror, virtutibus, unam prae caeteris eximiam habendam esse a Sapientibus accepi, sinceram nempe Vestri favoris integritatem.

Summam dico, et Reip. literariae solam salutarem Virtutem, qua praemia meritis, non gratiae servire jubetis, neque ambitioni.

Quare benefacti pretium Vestra ex gravitate ponderans, vix mihi tempero, quin tanti testimonii gloria animosus, quo coepi pede, pergam alacrior!

Verbosae ergo pompae loco, qua gratiarum actio suspecta redditur et Sapientibus odiosa, pauca ego haec religiosus spondeo!

Vestram Dignitatem summo venerationis cultu et obsequii semper colam sedulus!

Diligens sic mea se acuet industria, ut Vestrum favorem plurimi me facere et legitimis ultra ambire artibus, demonstrem.

Id studebo, ut bene agendo benefici, quod de me tulistis, iudicii aequitatem Orbi ipse comprobem!

## DIXI.

\*\*\* END OF THE PROJECT GUTENBERG EBOOK DE USU RATIOCINII  
MECHANICI IN MEDICINA \*\*\*

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

### START: FULL LICENSE THE FULL PROJECT GUTENBERG LICENSE PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg™ mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase “Project Gutenberg”), you agree to comply with all the terms of the Full Project Gutenberg™ License available with this file or online at [www.gutenberg.org/license](http://www.gutenberg.org/license).

#### **Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works**

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of

Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase “Project Gutenberg” associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than “Plain Vanilla ASCII” or other format used in the official version posted on the official Project Gutenberg™ website ([www.gutenberg.org](http://www.gutenberg.org)), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the



work in its original "Plain Vanilla ASCII" or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, "Information about donations to the Project Gutenberg Literary Archive Foundation."
- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.
- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain "Defects," such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the "Right of Replacement or Refund" described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written

explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you 'AS-IS', WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

## **Section 2. Information about the Mission of Project Gutenberg™**

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™'s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at [www.gutenberg.org](http://www.gutenberg.org).

## **Section 3. Information about the Project Gutenberg Literary Archive Foundation**

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at [www.gutenberg.org/contact](http://www.gutenberg.org/contact)

## **Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation**

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of

increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit [www.gutenberg.org/donate](http://www.gutenberg.org/donate).

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: [www.gutenberg.org/donate](http://www.gutenberg.org/donate)

## **Section 5. General Information About Project Gutenberg™ electronic works**

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: [www.gutenberg.org](http://www.gutenberg.org).

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.