Über drei historische biologische Arbeitshypothesen.

Von Walther Horn, Berlin-Dahlem.

Schluß [1]).

Patrick Matthew: „On naval Timber and Arboriculture: Appendix p. 363—391". Edinbourgh & London, 1831.

Note C. (Fortsetzung).

To what may we ascribe the superiority of this portion of the Caucasian breed, — may it arise in part from its repeated change of place under favourable circumstances? Other races have migrated, but not like this, always as conqueror. The Jew has been a stroller in his time; but he has improved more in mental acumen and cunning — not so much in heroism and personal qualities: his proscribed condition will account for this. The Caucasian in its progress, will also have mingled slightly, and, judging from analogy, perhaps advantageously, with the finer portion of those whom it has overwhelmed. This breed, by its wide move across the Atlantic, does not seem at all to have lost vigour, and retains the nautical and roving instinct unimpaired, although the American climate is certainly inferior to the European. It is there rapidly moving west, and may soon have described one of the earth's circles. A change of seed, that is, a change of place, within certain limits of latitude, is well known to be indispensable to the more sturdy growth and health of many cultivated vegetables; it is probable that this also holds true of the human race. There are few countries where the old breed has not again and again sunk before the vigour of new immigration; we even see the worn out breed, chased from their homes to new location, return, after a time, superior to their former vanquishers, or gradually work their way back in peace, by superior subsisting power: this is visible in France, where the aboriginal sallow Kelt, distinguished by high satyr-like feature, deep-placed sparkling brown or grey eye, narrowed lower part of the face, short erect vertebral column, great mental acuteness, and restless vivacity, has emerged from the holes of the earth, the recesses of the forests and wastes, into which it had been swept before the more powerful blue-eyed Caucasian; and being a smaller, more

[1]) Anfang erschienen in Arb. morph. taxon. Ent. Berlin-Dahlem, **3**, 231—237, 1936. Dort wurde in der Überschrift auf p. 233 vergessen anzuführen „Appendix, p. 363—391".

easily subsisting animal, has, by starving and eating out, been gradually undermining the breed of its former conquerors. The changes which have been taking place in France, and which, in many places, leave now scarcely a trace of the fine race which existed twenty centuries ago, may, however, in part, be accounted for by the admixture of the Caucasian and Keltic tending more to the character of the latter, from the latter being a purer and more fixed variety, and nearer the original type or medium standard of man; and from the warm dry plains of France (much drier from cultivation and the reduction of the forests), having considerable influence to increase this bias: In some of the south-eastern departments, more immediately in the tide of the ingress of the Caucasian, where the purest current has latest flowed, and the climate is more suitable, and also in some of the maritime districts, where the air is moister, and to which they have been seaborn at a later period, the Caucasian character is still prominent. Something of this, yet not so general, is occurring in Britain, where the fair bright-blooded race is again giving place to the darker and more sallow. This may, however, be partly occasioned by more of artificial heat and shelter and other consequences of higher civilization. There seems to be something connected with confinement and sedentary life, with morbid action of the liver, or respiratory or transpiratory organs, which tend to this change under dry and hot, and especially confined atmosphere. Perhaps imagination is also a worker here; and the colour most regarded, as snow in cold countries, black among colliers, white among bleachers, or even the dark colour of dress, may produce its peculiar impression, and our much looked-up-to Calvinistic priesthood, from the pulpit, disseminate darkness as well as light.

Our own Kelt has indubitably improved much since, *par necessité*, he took to the mountain; but, though steadily enduring, when there is mental excitement, he has acquired a distaste to dull hopeless unceasing labour, and would fare scantily and lie hard, rather than submit to the monotonous industry of the city operative, or the toil of the agricultural drudge. Though once a fugitive, the Kelt is now, in moral courage and hardihood, equal perhaps to any other, yet he still trembles to put foot on ocean.

Notwithstanding that change of place, simply, may have impression to improve the species, yet is it more to circumstances connected with this change, to which the chief part of the improvement must be referred In the agitation which accompanies emigration, the ablest in mind and body — the most powerful varieties of the race will be thrown into their natural position as leaders, impressing the stamp of their character on the people at large, and constituting the more reproductive part; while

the feebler or more improvident varieties will generally sink under the incidental hardships. Wen a swarm emigrates from a prosperous hive, it also will generally consist of the more adventurous stirring spirits, who, with the right of conquerors, will appropriate the finest of the indigenæ which they overrun; their choice of these being regulated by personal qualities, not by the adventitious circumstances of wealth or high birth — a regard to which certainly tends to deteriorate the species, and is one of the causes which renders the noblesse of Europe comparatively inferior to the Asiatic, or rather the Christian noblesse to the Mahometan.

It has been remarked, that our finest, most acute population, exist in the neutral ground, where the Caucasian and Keltic have mixed, but this may arise from other causes than admixture. Our healthiest and poorest country borders the Highlands, and the population enjoy more of the open air. Our eastern population, north of the natural division of Flamboroughead, are also harder and sharper featured, and keener witted, than those southward, who may be styled our fen-bred. There is no doubt more of Keltic blood mingled with the north division; but the sea-born breeds have also been different, those more northerly being Scandinavian, and the more southerly consisting of the native of Lower Germany and the heavy Fleming. The placid-looking Englishman, more under the control of animal enjoyment, though perhaps not so readily acute, excels in the no less valuable qualities of constancy and bodily powers of exertion; and when properly taught under high division of labour, becomes a better operative in his particular employment, and even will sometimes extend scientific discovery further, than his more mercurial northern neighbour, who, from his quick wits being generally in advance of his manual practice, seldom attains to the dexterity which results from the combination of continued bodily action and restricted mental application. There exists, however, very considerable intellectual capacity in this English breed, but it too frequently is crushed under the preponderance of the animal part, affording that purest specimen of vulgarity, the English clown. But, independently of climate and breed, a great part of the low Englander's obtuseness is referable to his being entailed lord of the soil, under poor-rate law, contravening a natural law (see note B), so that, when unsuccessful or out of employment, he, without effort to obtain some new means of independent subsistence, sinks into the parish or work-house labourer. On the contrary, the Scotsman, with no resource but in himself, with famine always in the vista, as much in his view as a principle of action in material affairs as his strong perception of the right in moral, and also under the stimulus of a high pride, leaves no means untried at home; and, when fairly starved out of

his native country, among various resources, often invades the territory of his more easy-minded southern neighbour, where his acuteness seldom fails to find out a convenient occupation, in which manual dexterity is second to economy and forethought — his success exciting the wonder and envy of the dull-witted native.

It would appear, that the finest portion, at least apparently so, of the north temperate zone, between the parallels of 30° and 48° latitude, when nearly of the level of the ocean, is not so favourable for human existence as the more northern part between 50° and 60°, or even the torrid zone. The native of the north of Europe has a superior development of person, and a much longer reproductory life than the native of the south, which more than counterbalances the earlier maturity of the latter in power of increase. Independent of the great current of population setting south in the northern part of the temperate zone, there seems even to be some tendency to a flux northward, from the confines of the torrid; but this arises rather from the unsteadiness of the seasons, and consequent deficit of food, at particular times, than from a steady increase of population.

Note D, p. 4.

Our milder moods, benevolence, gentleness, contemplation — our refinement in sentiment — our "lovely dreams of peace and joy", have negative weight in the balance of national strength. The rougher excitement of hatred, ambition, pride, patriotism, and the more selfish passions, is necessary to the full and strong development of our active powers. That Britain is leaving the impress of her energy and morality on a considerable portion of the world, is owing to her having first borne fire and sword over these countries: the husbandman tears up the glebe, with all its covering of weeds and flowers, before he commit his good seed to the earth. Life and death — good and evil — pleasure and pain, are the principles of impulse to the scheme or machine of nature, as heat and cold are to the steam-engine, thus moving in necessary alternate dependence. Our moral sense, our perception and love of good, could not exist without the knowledge of evil; yet, we shudder at the truth of evil being parth and portion of nature.

Note E.

There cannot be a more striking proof of the necessity of a better representation of the marine interest, than the fact, that our trading vessels are constructed of an unsuitable figure, owing to the improper manner of measuring the register tonnage. In order to save a little trouble of calculation to the surveying officer in gauging the contents of the vessel, the law directs him merely to take the length and breadth

at the widest place, and from these lines, by a regular formula, to compute the tonnage; the vessel paying the charges for lights and harbours, and other dues, in proportion to this measurement. The result is, that in order to lessen these dues individually, our vessels are constructed deep in proportion to breadth, consequently are sluggish sailers, and not nearly so safe and pleasant sea-boats as they otherwise would be — many a ship, especially with light cargo, getting on her beamends and foundering, or not standing up under canvass to weather a lee shore. The influence of this absurd measurement law is the more unlucky, as the ship-owner, from a deep vessel being, in proportion to the capacity of the hold, cheaper than one of shallower or longer dimensions, is already more disposed to construct his vessel deeper than is consistent with the safety of the seamen and security of the ship and cargo, the particular insurance of a deep vessel not being greater than that of one of safer proportions. The injurious effect from vessels being constructed on the principles of avoiding tolls or dues, rather than for sailing, will occur to every one. We need not say that all this flows frown the ignorance or carelessness of the constructors of our Parliamentary acts, consequent to defective representation.

Note F.

In the case of the upper carse on the Tay Firth, there is evidence, both from its vestiges and from records, that it had occupied, at least, the entire firth, or sea-basin, above Broughty Ferry, and that about 50 square miles of this carse has been carried out into the German Ocean by the strong sea-tide current, a consequence of the lowering of the German Ocean, and of the deepening of the outlet of this sea-basin at Broughty Ferry, apparently by this very rapid sea-tide current. This carse appears to have been a general deposition at the bottom of a lake having only a narrow outlet communicating with the sea, and probably did not rise much higher than the height of the bottom of the outlet at that time.

An increase of deposition of alluvium, or prevention of decrease, may, in many cases, be accomplished by artificial means. The diminution of the carse of the Tay was in rapid progress about sixty years ago, the sea-bank being undermined by the waves of the basin, the clay tumbling down, becoming diffused in the water, and being carried out to sea, by every ebbing tide, purer water returning from the ocean the next tide-flow. This decrease was stopped by the adoption of stone embanking and dikes. A small extension of the carses of present high-water level, in the upper part of the firths of Tay and Forth, has lately been effected, by forming brushwood, stone and mud dikes, to promote

the accumulation. In doing this, the whole art consists in placing obstructions to the current and waves, so that whatever deposition takes place at high-water, or at the beginning of the flood-tide, when the water is nearly still, may not again be raised and carried off.

Notwithstanding this accumulation, and also the prevention of further waste of the superior carse, the deepening of the Tay Firth, formerly carse, and of the gorge at Broughty Ferry, seems still in progress, and could not, without very considerable labour, be prevented. In the case, however, of the sea-basin of Montrose, a little labour, from the narrowness of the gorges, would put it in a condition to become gradually filled with mud. Not a great deal more expenditure than what has sufficed to erect the suspension-bridge over its largest outlet, would have entirely filled up this outlet, and the smaller outlet might have been also filled to within several feet of highwater, and made of sufficient breadth only, to emit the water of the river, which flows into the basin. The floated sand and mud of this river, thus prevented from being carried out to sea, would, in the course of years, completely fill up the basin.

From some vestiges of the upper carse, as well as of the lower or submarine carse, in situations where their formation cannot easily be traced to any local cause, it seems not improbable that the basin of the German sea itself, nearly as far north as the extent of Scotland, had at one time been occupied with a carse or delta, a continuation of Holland, formed by the accumulation of the diluvium of the rivers which flow into this basin, together with the molluscous exuviæ of the North Sea, and the abrasion of the Norwegian coast and Scottish islands, borne downward by the heavy North Sea swell.

In the case of the delta of Holland having extended so far northward, a subsidence of the land or rising of the sea, so as to form a passage for the waters round Britain, must have occurred. The derangement, at several places, of the fine wavy stratification of these carses, and the confusedly heaped-up beds of broken sea-shells, shew that some great rush of water had taken place, probably when Belgium was dissevered from England. Since the opening of the bottom of the gulf, the accumulation may have been undergoing a gradual reduction, by more diffused mud [1]) being carried off from the German Sea into the Atlantic and North Sea, than what the former is receiving — the same process taking place here as has been occurring in the basin of the Tay. The

[1]) The sea water from Flamborough-head, southward to the Straits of Dover, is generally discoloured with mud; and during every breeze takes up an addition from the bottom, which is an alluvium so unstable and loose, that no sea vegetation can hold in it. From not producing herbage, the general basis of animal life, few fishes or shells can find support in it.

large sandbanks on the Dutch and English coast, — in some places, such as the Goodwin Sands, certainly the heavier, less diffusible part of the former alluvial country, and portions of these alluvial districts being retained by artificial means, — bear a striking resemblance to the sandbanks of the sea basin of the Tay — the less diffusible remains of the removed portion of the alluvium which had once occupied all that basin, and to the remaining portion of the alluvium also retained by artificial means.

Throughout this volume, we have felt considerable inconvenience, from the adopted dogmatical classification of plants, and have all along been floundering between species and variety, which certainly under culture soften into each other. A particular conformity, each after its own kind, when in a state of nature, termed species, no doubt exists to a considerable degree. This conformity has existed during the last forty centuries. Geologists discover a like particular conformity — fossil species — through the deep deposition of each great epoch, but they also discover an almost complete difference to exist between the species or stamp of life, of one epoch from that of every other. We are therefore led to admit, either of a repeated miraculous creation; or of a power of change, under a change of circumstances, to belong to living organized matter, or rather to the congeries of inferior life, which appears to form superior. The derangements and changes in organized existence, induced by a change of circumstance from the interference of man, affording us proof of the plastic quality of superior life, and the likelihood that circumstances have been very different in the different epochs, though steady in each, tend strongly to heighten the probability of the latter theory.

When we view the immense calcareous and bituminous formations, principally from the waters and atmosphere, and consider the oxidations and depositions which have taken place, either gradually, or during some of the great convulsions, it appears at least probable, that the liquid elements containing life have varied considerably at different times in composition and in weight; that our atmosphere has contained a much greater proportion of carbonic acid or oxygen; and our waters, aided by excess of carbonic acid, and greater heat resulting from greater density of atmosphere, have contained a greater quantity of lime and other mineral solutions. Is the inference then unphilosophic, that living things which are proved to have a circumstance-suiting power — a very slight change of circumstance by culture inducing a corresponding change of character — may have gradually accommodated themselves to the variations of the elements containing them, and, without new creation, have presented the diverging changeable phenomena of past and present organized existence.

The destructive liquid currents, before which the hardest mountains have been swept and comminuted into gravel, sand, and mud, which intervened between and divided these epochs, probably extending over the whole surface of the globe, and destroying nearly all living things, must have reduced existence so much, that an unoccupied field would be formed for new diverging ramifications of life, which, from the connected sexual system of vegetables, and the natural instincts of animals to herd and combine with their own kind, would fall into specific groups, these remnants, in the course of time, moulding and accommodating their being anew to the change of circumstances, and to every possible means of subsistence, and the millions of ages of regularity which appear to have followed between the epochs, probably after this accommodation was completed, affording fossil deposit of regular specific character.

There are only two probable ways of change — the above, and the still wider deviation from present occurrence, — of indestructible or molecular life (which seems to resolve itself into powers of attraction and repulsion under mathematical figure and regulation, bearing a slight systematic similitude to the great aggregations of matter), gradually uniting and developing itself into new circumstance-suited living aggregates, without the presence of any mould or germ of former aggregates, but this scarcely differs from new creation, only it forms a portion of a continued scheme or system.

In endeavouring to trace, in the former way, the principle of these changes of fashion which have taken place in the domiciles of life, the following questions occur: Do they arise from admixture of species nearly allied producing intermediate species? Are they *the diverging ramifications* of the living principle under modification of circumstance? Or have they resulted from the combined agency of both? Is there only one living principle? Does organized existence, and perhaps all material existence, consist of one Proteus principle of life capable of gradual circumstance-suited modifications and aggregations, whithout bound under the solvent or motion-giving principle, heat or light? There is more beauty and unity of design in this continual balancing of life to circumstance, and greater conformity to those dispositions of nature which are manifest to us, than in total destruction and new creation. It is improbable that much of this diversification is owing to commixture of species nearly allied, all change by this appears very limited, and confined within the bounds of what is called Species; the progeny of the same parents, under great difference of circumstance, might, in several generations, even become distinct species, incapable of co-reproduction.

The self-regulating adaptive disposition of organized life may, in part, be traced to the extreme fecundity of Nature, who, as before stated,

has, in all the varieties of her offspring, a prolific power much beyond (in many cases a thousandfold) what is necessary to fill up the vacancies caused by senile decay. As the field of existence is limited and preoccupied, it is only the hardier, more robust, better suited to circumstance individuals, who are able to struggle forward to maturity, these inhabiting only the situations to which they have superior adaptation and greater power of occupancy than any other kind; the weaker, less circumstance-suited, being prematurely destroyed. This principle is in constant action, it regulates the colour, the figure, the capacities, and instincts; those individuals of each species, whose colour and covering are best suited to concealment or protection from enemies, or defence from vicissitude and inclemencies of climate, whose figure is best accommodated to health, strength, defence, and support; whose capacities and instincts can best regulate the physical energies to self-advantage according to circumstances — in such immense waste of primary and youthful life, *those* only come forward to maturity from the strict ordeal by which Nature tests their adaptation to her standard of perfection and fitness to continue their kind by reproduction.

From the unremitting operation of this law acting in concert with the tendency which the progeny have to take the more particular qualities of the parents, together with the connected sexual system in vegetables, and instinctive limitation to its own kind in animals, a considerable uniformity of figure, colour, and character, is induced, constituting species; the breed gradually acquiring the very best possible adaptation of these to its condition which it is susceptible of, and when alteration of circumstance occurs, thus changing in character to suit these as far as its nature is susceptible of change.

This circumstance-adaptive law, operating upon the slight but continued natural disposition to sport in the progeny (seedling variety), does not preclude the supposed influence which volition or sensation may have over the configuration of the body. To examine into the disposition to sport in the progeny, even when there is only one parent, as in many vegetables, and to investigate how much variation is modified by the mind or nervous sensation of the parents, or of the living thing itself during its progress to maturity; how far it depends upon external circumstance, and how far on the will, irritability and muscular exertion, is open to examination and experiment. In the first place, we ought to investigate its dependency upon the preceding links of the particular chain of live, variety being often merely types or approximations of former parentage; thence the variation of the family, as well as of the individual, must be embraced by our experiments.

This continuation of family type, not broken by casual particular

aberration, is mental as well as corporeal, and is exemplified in many of the dispositions or instincts of particular races of men. These innate or continuous ideas or habits, seem proportionally greater in the insect tribes, those especially of shorter revolution; and forming an abiding memory, may resolve much of the enigma of instinct, and the foreknowledge which these tribes have of what is necessary to completing their round of life, reducing this to knowledge, or impressions, and habits, acquired by a long experience. This greater continuity of existence, or rather continuity of perceptions and impressions, in insects, is highly probable; it is even difficult in some to assertain the particular stops when each individuality commences, under the different phases of egg, larva, pupa, or if much consciousness of individuality exists. The continuation of reproduction for several generations by the females alone in some of these tribes, tends to the probability of the greater continuity of existence, and the subdivisions of life by cuttings, at any rate must stagger the advocate of individuality.

Among the millions of *specific varieties* of living things which occupy the humid portion of the surface of our planet, as far back as can be traced, there does not appear, with the exception of man, to have been any particular engrossing race, but a pretty fair balance of powers of occupancy, — or rather, most wonderful variation of circumstance parallel to the nature of every species, as if circumstance and species had grown up together. There are indeed several races which have threatened ascendency in some particular regions, but it is man alone from whom any general imminent danger to the existence of his brethren is to be dreaded.

As far back as history reaches, man had already had considerable influence, and had made encroachments upon his fellow denizens, probably occasioning the destruction of many species, and the production and continuation of a number of varieties or even species, which he found more suited to supply his wants, but which, from the infirmity of their condition — not having undergone selection by the law of nature, of which we have spoken, cannot maintain their ground without his culture and protection.

It his, however, only in the present age that man has begun to reap the fruits of his tedious education, and has proven how much "knowledge is power". He has now acquired a dominion over the material world, and a consequent power of increase, so as to render it probable that the whole surface of the earth may soon be overrun by this engrossing anomaly, to the annihilation of every wonderful and beautiful variety of animated existence, which does not administer to his wants principally as laboratories of preparation to befit cruder elemental matter for assimilation by his organs.

In taking a retrospective glance at our pages from the press, we notice some inaccuracy and roughness, which a little more timely attention to *training* and *pruning* might have obviated; the facts and induction may, however, outbalance these.

We observe that Fig. *d*, p. 27[1]), from the want of proper shading, and error in not marking the dotted lines, does not serve well to illustrate our purpose. This figure is intended to represent a tree of a short thick stem, dividing into four branches, springing out regularly in the manner of a cross, nearly at right angles with the stem. These branches cut over about three or four feet out from the division, form each one wing of a knee, and the stem, quartered longitudinally through the heart, forms the other wing. It is of great advantage to have four branches rather than two or three, as the stem, divided into four, by being twice cut down the middle, forms the wings nearly square; whereas, when divided into two, the halves are broad and flat, and a considerable loss of timber takes place; besides, the two branches afford a thicker wing than the flat half of the stem does when squared. When the tree separates into three branches, the stem does not saw out conveniently; and when divided, the cleft part is angular, and much loss of timber also takes place in the squaring. When the stem divides into four branches, each of these branches coincides in thickness with the quartered stem, and the knees are obtained equally thick throughout, without any loss of timber. The four branches, at six or eight feet above the division, may with a little attention be thrown into a rectangular bend, and thus give eight knees from each tree. Knees are generally required of about eight inches in diameter, and three and a half feet in length of wing; but when they are to be had thicker and longer, a foot or more in thickness, and from four to ten feet in length of wing, they are equally in request, suiting for high rising floors or heel-knees.

The directions for forming larch roots into knees after the tree is grubbed, are also not very explicit. The stem of the tree is cut over nearly the same distance from the bulb as the length of the root spurs; this quartered through the heart (in the same manner as above), forms one wing of the knee, and the four spurs form the other wings. The same advantage results from having four regular root-spurs in larch, as in having four regular branches in oak: the two processes are quite similar, only the roots in the one case, and the branches in the other, form one wing of the knees.

We have given no directions for the bending of plank timber. In larch, the wind generally gives the slight necessary bend to a sufficient

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[1]) Die Abbildung gehört nicht zum Appendix.

proportion; and in oak, the trees frequently grow a little bent of their own accord.

A foot-note has been omitted, stating, that the plan of bending young trees, by tying them to an adjacent tree, intended to be soon removed, belongs, as we are informed, to Mr Loudon.

We regret that our allusion te the lamented Mr Huskisson was printed off before we knew of his death.

Since this volume went to press, there has been some changes of scenery on the political European stage, *even rivalling* what has ever been accomplished of sylvan metamorphosis on the face of nature by Sir Henry Steuart. The intense interest excited by these efforts towards the regeneration of man, has completely thrown into shade our humbler subject — the regeneration of trees. We have even forgot it ourselves in the hands of the printer, while yet unborn. These sudden transformations altering the political and moral relations of man, also render a number of our observations not quite apposite, and our speculations, some of them, rather "prophetic of the past". They, by obliterating national distinctions, and diminishing the occasions for going to war, will, it is hoped, bring the European family closer into amity. At any rate, they have completely thrown out the calculations of our politicians regarding the balance of power and international connection as natural allies and foes, and bind the French and the British together by ties on the surest principle of friendly sympathy, "*idem velle atque nolle*", which no Machiavellian policy of cabinets, nor waywardness of political head, will be able to sunder.

We had intended to bring out Naval Timber and Arboriculture as a portion of a work embracing Rural Economy in general, but this is not a time to think of rural affairs. („Appendix" p. 391.)

Marcus Antonius Plenciz: „Opera Medico-Physica, in quatuor tractatus digesta. 1 Contagii morborum idea nova. 2. de Variolis. 3. de Scarlatina. 4. de terrae motu. Tractus I." Vindobonnae, 1762.

Series rerum notabiliorum, quae in tractatu de contagio continentur.

Sectio Prima.

De Contagio in Genere agit.

1.

Quamvis evidenter demonstrari non possit, morbos contagiosos ante universale diluvium viguisse, probabile tamen est, eisdem etiam tunc genus humanum afflictum fuisse. §. I.

II. Ex sacris & profanis constat, mox post diluvium tales morbos grassatos fuisse. §. 2.

III. Quamvis morbi contagiosi aliquid Divini prae se ferre videantur, nibilominus tamen licet in eorum naturam, & essentiam indagare. 4. 5. 6.

IV. Qua ratione morbi contagiosi, & epidemici inter se differant. 10. 11. &c.

V. Quam ob rem videtur alia esse ratio & causa morborum pure pute epidemicorum, & alia contagiosorum. 16. 17. 18. &c.

VI. Afferuntur diversae de contagio sententiae, & tandem illa, quae principibus de contagio quaestionibus magis satisfacit, omnibus aliis praeferenda erit. 20. 21. 22. 23. &c.

VII. Afferuntur principes de contagio quaestiones, & difficultates. 21. 22. &c.

VIII. His difficultatibus satisfieri non potest per quasdam fermentationes aut effervescentias miasmatis contagiosi cum nostris humoribus. 29. 30. 31. &c.

IX. Sive miasma contagiosum dicatur esse acidum sive alcali sive neutrum difficultates de contagio minime solvere potest. 34. 35. &c.

X. Miasma contagiosum sine omni fundamento a plerisque venenosum, & arsenicale vocari solet. 36. 37. &c.

XI. Quapropter bis ostenditur illa communis, & a plerisque celeberrimus viris recepta sententia, in sale quodam volatili alcalino naturam contagii reponens, tam parum, quam aliae essentiam contagii exhaurire. 40. 41. 42. &c.

XII. Natura contagii, ejusque phaenomena videntur optime per principium quoddam seminale verminosum exponi, & explicari. 46. 47.

XIII. Haec sententia diversis rationibus, & experimentis corroboratur, & ab adversariorum injuriis vindicatur. 49. 50. 51. &c.

Sectio I.

De Contagio in genere.

(im Original p. 1—44).

I.

Quamvis evidenter demonstrari non possit, ante, & mox post universale diluvium, morbos contagiosos viguisse, probabile tamen est, iisdem, sicut aliis calamitatibus, eo tempore afflictum fuisse genus humanum: interim ex sacris literis constat, anno post diluvium 827. sub Moyse, & Pharaone morbum contagiosum pestilentialem, qui & homines, & bruta tenebat, extitisse; item eundem grassatum fuisse anno 1203. sub Samuele Propheta; uti & anno 1282. sub Daniele.

II.

Si profanos autores consulamus, nobis constabit ex Platone, & Eusebio, tempore Cicropis primi Atheniensium Regis, anno post Deucalionis diluvium 787. funestam pestem exhausisse Aegypti, & Aethiopiæ urbes. Item anno 1022. Italiam, 1150. Græciam, Thraciam, Cretam, & anno 1254. post Trojae excidium iterato Graeciam, & vicinas Asiæ regiones a contagio pestis infestatas fuisse; quæ omnia ut & reliqua contagii mala, quæ subsequis sæculis diversas occupabant orbis partes, videri & legi possunt in Herodoto, Hesiodo, Livio, aliisque probatis autoribus.

III.

Ex his, & similibus casibus B. L. cognosces, quod ex veterum monumentis notitiam & historiam contagiosorum morborum haurire omnino possimus; ast ubique altum de essentia, & natura contagii silentium reperies. Divus Hippocr. ipse in suis epidemiis explanat pestem Atheniensem Olympiade 79. grassantem, & a Thucidide suo contemporaneo nitidissime alias descriptam, absque eo tamen, ut inquirat in naturam talis contagii.

IV.

Forsitan id factum est, uti plures etiam modernorum celeberrimi viri autumant, quod tales morbi contagiosi aliquid Divini præ se ferre videantur; sic enim nefas esse credunt, si humanum ingenium in hæc Divina inquirere satagat, unde fit, ut credant, satius esse in rebus occultis, & obscuris propriam fateri ignorantiam, quam talia in medium adferre, quæ multis forte risum, & stomachum movere possent.

V.

Verum si talia præjudicia omni ævo viguissent, quod quæso, arcana naturæ jam patefacta in alto sepulta adhucdum jacerent? quin imo ipse Divus Hipp. de morbis alias Divinis dictis aliter sentit; nam de morbo sacro, & alibi docet, *quod nullus morbus altero Divinior, aut humanior existat, sed Divini omnes, cum horum quisque suam naturam habeat, nec quidquam citra naturam fiat; homines vero naturam, & causam morbi Divinam esse putarunt præ inexperientia & admiratione.*

VI.

Quare spretis omnibus conviciis de trivio dabimus primo generalem, & superficialem fere contagii ideam. Dein explanabimus, quid illud sit, & in quo consistat, quod contagium nominamus; ad hoc ut quasi per gradus natura contagii facilius pateat.

VII.

Quod prædictam superficialem, & fere extrinsecam contagii notionem concernit, hanc apud Cicer. L. 2. de Divin. sed minus apte expressam habemus, ubi dicit quod contagium sit illa vis, quæ a syderibus defluit,

& in sublunaria influit; etenim quondam multi morbi ab influxu syderum in nostra corpora derivabantur; hodie vero meliore imbuti ratiocinio sublunares morborum, uti & contagii causas vix non omnes admittimus; & quid sit contagium in genere consideratum, alio concipimus modo.

VIII.

Contagium itaque est illa vis, qua affectus aliquis occupans unum corpus communicatur alteri corpori. Quapropter omnes illos morbos contagiosos nominare libet, qui ab uno subjecto transeunt ad aliud. Hoc vero duplici potissimum solet contingere modo, vel enim id fit immediate per contactum, ut in scabie, lue venerea; vel mediate, seu ut solet dici, in distans, mediante aere, ut in peste, purpura, variolis. Aliud est etiam contagium per fomitem; dum materia contagiosa diu iners, antequam in actum deducatur alicui corpori inhæret. Ut hoc contingere solet in hydrophobia, lue venerea, podagra, & similibus affectibus, qui aliquando in seris primo nepotibus in actum deducuntur, qui prout mediate vel immediate communicantur, ad duos priores modos reduci possunt.

IX.

Hæc dicta sunto de contagio, quod ab extrinseco advenit, & alteri corpori communicatur; verum quid dicendum erit de illo contagio, quod corporibus jam inhæret, & suapte natura dato tempore, quin imo aliquando ex forti imaginatione in actum deducitur? scio quidem, vix non omnes celebres viros in hac esse opinione, contagium ab extrinseco tantum advenire, & alteri communicari; sed dein ostendemus hoc præjudicium erroneum esse.

X.

Interim ad clariorem contagii ideam scire oportet, non tantum quid sit morbus contagiosus, sed etiam quid sit epidemicus seu popularis, & quæ sit inter ipsos differentia; cum, quamvis non semper plerumque tamen, morbos, qui epidemici vocantur, observemus esse contagiosos, & vicissim.

XI.

Hippocrat. Lib. de natura humana morbos epidemicos sic describit: *Quamdo ab uno morbo multi homines corripiuntur eodem tempore, causam ad id, quod communissimum est, & quo maxime omnes utimur, referre oportet, est autem hoc spiritus, & aër, quem inspirando trahimus.*

XII.

Itaque morbi populares a communi quidem causa, ut aëre dependent, sed non semper eodem modo disposito, alias tales morbi continuarent sine intermissione; debet igitur aëri tunc aliquid accedere, quod cæteroquin ipsi non inest; quod Hippocrat. eodem Lib. de natura humana sic exponit: *palamque est, aërem tunc morbosam aliquam exhalationem habere.* Istæ exhalationes dum aëri miscentur, morbos populares, qui sæpe pariter

contagiosi sunt, causantur. Quid vero istæ exhalationes sint, & unde originem trahant, patebit, dum de causis contagii verba faciemus.

XIII.

Interea hic saltem superficialiter novisse sufficiat, quid sit morbus contagiosus, quid epidemicus, & quæ sit inter ipsos differentia; experientia enim nos docet, eundem morbum posse esse epidemicum & contagiosum; tales sunt febres malignæ, pestilentiales, petechiales, variolosæ, morbillosæ, urticatæ, scarlatinæ, dyssenteria præcipue castrensis; huc etiam referri potest pertussis, seu tussis convulsiva infantum, quia hæc certo tempore grassatur, & unus eadem affectus infans plures alios secum commorantes eadem afficere valet.

XIV.

Item experientia constat eundem morbum posse esse epidemicum, quin tamen tam facile contagiosus dici possit. Tales sunt diversæ febres rheumaticæ, intermittentes. Huc referri possunt aliquando mortes subitaneæ, de quibus Lancisius eruditissime tractavit. Observavit quoque Boillius ipse, quod ex peculiari flante apud septemtrionales vento homines derepente moriantur.

XV.

Tandem etiam experientia patet, dari morbos contagiosos, qui non sunt epidemici; tales sunt scabies, lepra, elephantiasis, podagra, lues venerea, hydrophobia, carcinoma apertum, phtisis; item Clariss. Frid. Hoffm. Lib. de externis affectionibus, dicit quædam ulcera externa esse contagiosa. Quin imo morbi exanthematici possunt sine epidemia esse contagiosi; sic variolæ possunt inoculari absente epidemia.

XVI.

Dantur alii morbi, de quibus dubium esse potest, ad quam ex dictis speciem referri debeant; sic anno 1757. passim hic Viennæ corripiebantur homines tumoribus quibusdam, veras parotides, sed sine notabili febre præ se ferentibus. Similes erant nobilium adolescentum fere 60. in Academia Sabaudica, qui eodem afficiebantur tumore sed plerumque cum sat levi febricula. Copiosis diluentibus, antiphlogisticis, diaphoreticis, & fomentis externis, siccis, tepidis; intra octiduum, aliquando intra duas septimanas dissipabantur omnes, absque omni suppuratione.

XVII.

Cum itaque ex dictis constet, morbos epidemicos non semper cum contagio conjungi, debemus necessario admittere, aliam esse causam epidemiæ, & aliam contagii. Unde fit, ut nunquam satis Venerandus Sydenhamius miretur, ab iisdem saltem ad sensum nostrum tempestatibus diversos exoriri morbos, diversam medendi methodum requirentes, quod potissimum de epidemicis contagiosis intelligendum est.

XVIII.

Si morbi sint pure pute epidemici, poterunt ad causas manifestas, seu ad qualitates, humidi & sicci, calidi & frigidi; adeoque ad diversam eorundem miscellam, prædominium, durationem, aut repentinam mutationem, reduci. Si vero sint contagiosi, alia est, & longe major difficultas determinandi, in quo proprie consistat illorum contagium, ipsiusque contagii vera natura; in qua indaganda, & explananda celeberrimi præcipue in arte viri plurimum adlaborarunt, diversasque de contagio opiniones in medium adduxerunt, quas nos hic loci seorsim explanabimus, & trutinabimus; ad hoc ut appareat, quæ ex his magis respondeat Phœnomenis, quæ in morbis contagiosis observantur.

XIX.

Quilibet intelliget, summi in arte medendi esse momenti, veram, si possibile est, contagii naturam cognoscere; secus enim illi medentes in tenebris versamur, & remedium potius sorte, quam ratione arripimus. Ipse Celsus effatur: *ad rem pertinet omnium proprietates nosse.*

XX.

Quare sententiam de contagio, quæ sequentibus quæstionibus magis apposite satisfaciet, amplectemur.

XXI.

Quæstio prima: quare a variolis variolæ; a morbillis morbilli; a scarlatina pariter scarlatina; item a peste pestis; a lue venerea lues venerea; idem dicendum est de hydrophobia, scabie, aliisque morbis contagiosis, ordinaria naturæ lege oriantur? Unde signum evidentissimum est, ut dein clarius patebit, hos & similes morbos specie inter se differe. Hinc apparet, quam erronea sit aliquorum opinio afferentium, hos morbos uti & illorum causam materialem differre inter se secundum magis & minus tantum; nimirum in quantum in uno causa materialis volatilior, in altero vero fixior supponitur. Sed quis quæso ab omni præjudicio alienus crediderit, scabiem & variolas, luem veneream, & petechias habere eandem causam materialem secundum magis & minus differentem? quis unquam, vidit petechias in luem veneream, aut scabiem in variolas degenerasse? quin imo plus una vice observavi, quod scabiosi si variolis afficiuntur, tempore & stadio variolarum scabies evanescat; verum exsiccatis variolis, postliminio recrudescat, & pertinacissime affligat, quod certe fieri non posset, si eandem haberent causam materialem; igitur dicendum est, quod, sicut plantas, & eorum semina specie differre palam fatemur, quia ordinaria naturæ lege a certo semine certam tantum plantam exoriri observamus, idem pariter dicendum sit de morbis contagiosis; nimirum ipsos, eorumque causas specie inter se differre.

XXII.

Quæstio secunda: quare contagium certam tantum animalium speciem afficere soleat? sic experientia constat, aliam esse luem humanam, aliam bovinam, aliam, ovinam, & aliam equinam; qualis in Anglia nunc 1760. inter equos grassatur. Qualis etiam hic in Austria, præcipue vero Viennæ inter genus equinum per modum cujusdam Catarrhi suffocativi, & inflammationis pulmonum anno 1755. grassabatur; item datur epidemia contagiosa pennatorum, & piscium; qualis descripta habetur in act. Nat. Cur. anno 5. obs. 170. item ait Furman: alt und neues Wien p. 515. similem pestem pennatorum observatam fuisse prima vice hic Viennæ anno 1286. qua gallinæ & aves derepente extinguebantur. Nostro autem tempore nimirum anno 1752. luem inter gallinas hic Viennæ observavimus, qua fere innumerabiles, extinguebantur.

XXIII.

Neque enim observamus, quod contagium ab una specie v. g. a bovina ad aliam, ut humanam, aut caninam, transeat; experientia enim docet, & homines & canes inter armenta lue affecta innoxie versari posse; interim hoc proh dolor! quotidiana constat experientia tam ab hominibus, quam a canibus cum bobus lue affectis commorantibus facile ad boves sanos idem contagium transportari, & iisdem communicari posse. Unde fit, ut ab illis, qui sanitati publicæ invigilare debent, hoc in casu certæ capiantur cautelæ.

XXIV.

Non ignoro, adduci posse exempla contagii, quod a brutis ad homines, & vicissim, translatum fuisse creditur; talia legi possunt in Ephemerid. dec. 2. an. 7. obs. 192. item cent. VIII. obs. 44. verum dein patebit, hoc non fuisse idem, sed specie diversum contagium.

XXV.

Quæstio tertia: quare & quomodo fiat, ut materia contagiosa valde diu iners, & insons latere, & tandem longo post tempore, & data occasione in actum deduci possit? uti hoc proh dolor! in peste sæpe observatum fuit: sic Salmuth obs. 64. cap. 1. constat, pestem per annum in homine latuisse. Item hydrophobia morsum canis sæpe diu post subsecuta fuit. Vid. act. Nat. cur. vol. 1. obs. 7. p. 38. Item Dec. 1. ann. 10. obs. 43. Lues venerea pariter diu latere potest in corpore, antequam in actum deducatur. Ut inter alios Rejes quæst. 58. p. 774. item experientia constat, morbos hæreditarios in seris primo nepotibus efflorescere, & propululare. Prætereo hic multas alias observationes, contagii pestilentialis in vestibus, aliisque hirsutis corporibus diu latentis: pesti enim volupe est in lana diu cubare.

XXVI.

Quæstio quarta, & inter reliquas princeps: quare materia contagiosa sit tam facile communicabilis, & tam mirum in modum multiplicabilis? ubi funesto sæpe eventu observatæ fuerunt ab uno peste affecto homine plures provinciæ, & frequentissimæ civitates eodem infici, & exhauriri contagio. Item innumera extant exempla, ab una lue affecta pecude numerosissimum sæpe peculium deletum esse. Romazzinii, & Lancisius judicant, anno 1710. mala sorte ab uno lue affecto Hungarico bove in Italiam delato, eandem luem per universam fere Italiam propagatam fuisse. Item portio materiæ variolosæ vix sensibilis per insitionem & inoculationem multiplicari potest vix non sine fine; ex quibus constat, quam multiplicabile sit contagium.

XXVII.

Quanta vero facilitate materia contagiosa sit communicabilis, superius jam diximus, eandem facillime a canibus, ab hominibus, a grege lue affecto ad sanum deferri posse. Mirabilem casum legimus in act. Nat. cur. Dec. 3. ann. 7. obs. 193. ubi febris maligna contagiosa ab olfactis floribus, quibus cadaver tali morbo affectum, & defunctum, ornatum erat, contrahebatur. Item a morsu muscæ, quæ cadaveri peste infecto insederat, pestem communicatam fuisse, asserit Garman. L. 2. Tom. 2. § 58. unde patet necessitas cadavera lue affectorum mature, & profunde tumulandi; nocus enim exhalationes contagiosæ facillime per aëra, & ventos non tantum ad vicina, sed & ad remota loca transferri & communicari poterunt.

XXVIII.

Istæ sunt principes, quæ de contagio moveri solent difficultates, & quæstiones; quare ab aliis recensendis, quæ per decursum operis patebunt, supersedemus; nam sententia, quæ propositis quæstionibus fatisfaciet, non laborabit in aliis. Proponemus igitur, & trutinabimus principes autorum de contagio sententias, & tandem illam saltem, ut verisimiliorem, quæ propositis quæstionibus magis satisfecerit, amplectemur. Nihil hic dicemus de archæis Helmontii; de Realgore Paracelsi; neque de influxu astrorum ab aliquibus pro causa contagii assumpto. Hæc enim in moderno foro medico pro commentis habentur.

XXIX.

Prima opinio, quam multi celebres viri amplectuntur, contagii naturam explanare conatur per quasdam fermentationes miasmatis maligni cum nostris humoribus, unde fit, dicunt, ut eosdem in sui naturam mutet, atque assimilet eodem fere modo, uti parva fermenti pistorii portio integram panificii massam in motum fermentativum concitat, sibique similem reddit.

XXX.

Verum ista sententia multis premitur, quibus satisfieri nequit, diffi-

cultatibus, ut primo, quod motus fermentationis ab his autoribus nimis generaliter, & pro quolibet motu intestino, sive is sit fermentationis, putrefactionis, aut effervescentiæ, assumatur, & venditetur; cum tamen hi motus distingui debeant, eo quod diversus ex his resultet effectus. Vide celeberr. Boerhavii chemiam: sic effectus fermentationis est in spiritum ardentem, aut acidum mutatio; si vero effectum contagii, aut exitum morborum contagiosorum intime consideremus, videbimus illos potius juxta mentem horum autorum in alcali degenerare, adeoque ex hoc jam uno fundamento videtur ista corruere opinio.

XXXI.

Secundo: si vero motum fermentationis cum motu putrefactionis confundere velis, incides in scyllam volens vitare charybdim; quia debes primo ostendere, in quo consistat iste motus putresactionis, & in quo a motu fermentationis differat; cum unus & alter consistat in certo particularum motu intestino, videntur itaque potius convenire, quam differre; unde ab uno sicut ab altero deberet idem exurgere effectus, adeoque idem semper redit argumentum.

XXXII.

Tertio: quotidie vix non multa putrida in usum vocantur absque eo, quod talis motus putrefactionis exurgat; & absque eo, ut humores nostri illis putridis assimilentur.

XXXIII.

Quarto: superius ostendimus morbos contagiosos specie inter se differre; adeoque tot deberent admitti fermenta, quot sunt species morborum contagiosorum, quod iterum omni ratione & fundamento destituitur, quis enim istam fermentorum differentiam determinare posset? adeoque vel deberet admitti, quod diversa specie fermenta cum una humorum nostrorum massa fermentare possint; vel quod ab una specie fermentorum diversi specie contagiosi morbi produci possint; verum utrumque est tam erroneum, quam inconceptibile, sicque dicta sententia de fermentis per se corruit.

XXXIV.

Alia est sententia, quæ acidum, & alcali, aut unum ex his pro natura contagii assumit. Ast sententia hæc adhuc majoribus quam prior, involvitur difficultatibus. Etenim superius jam ostendimus, diversas dari species contagii, juxta hanc sententiam vero, sive dicas in utroque, sive in alterutro ex illis consistere naturam contagii, nunquam diversas contagii species salvare poteris, sic enim omnes morbi contagiosi ad unam aut alteram speciem reduci deberent.

XXXV.

Præterea si dicas, causam materialem contagii esse aliquod acidum,

omnipl vix potest, quomodo tam facile communicari & multiplicari possit; cum acida non sint tam volatilia neque tam expansibilia; quin imo experientia contrarium demonstrat, ab omnibus acidis contagium potius cicurari, ejusque communicabilitatem, & multiplicationem potius impediri & immutari; nam in regionibus septemtrionalibus pestem rarius grassari, & minus multiplicari experientia constat; cujus alia ratio esse non potest, nisi quod ibidem acidum aëreum Catholicum prædominetur, quod docet confectio nitri moscovitici; de quo vide elegantissimum tractatum celeberr. Frid. Hoffm. de nitro.

XXXVI.

Tandem ex perientiapatet in morbis contagiosis humores nostros ad putredinem disponi, ut fautores hujus sententiæ dicunt, adeoque sal aliquod alcalinum volatile potius pro natura contagii, quam acidum statui debet; & hæc est fere omnium celeberrimorum medicorum hoc tempore de natura contagii decantata, & recepta sententia; quam aliis etiam solent exprimere verbis: miasma malignum, & venenosum, & arsenicale appellantes, quod dum nostris miscetur humoribus, eosdem sive motu humorum circulatorio, sive fermentationis, aut effervescentiæ quodam motu, corrumpit, & sibi assimilat. Verumtamen pace tantorum virorum taliter sentientium omni possibili modestia, eorumque debita veneratione ostendemus, quam parum hæc sententia satisfaciat explanationi contagii; multo minus superius propositis quæstionibus respondeat.

XXXVII.

Primo mirari satis non valeo, quare viri cætera Eruditissimi miasmata contagii venenosa, & arsenicalia vocare consueverint; cum ista apellatio rationem contagii potius destruat quam exprimat; nam sive venena ex regno animali, vegetabili, aut minerali in probationem hujus sententiæ assumant, semper falluntur; quia nec morsus viperæ, nec napellus, nec arsenicum, aut quodcunque aliud venenum ad contagium referri potest; experientia enim constat, carnes animalium ex morsu viperæ, aut quocunque alio assumpto veneno necatorum, nulla ratione esse venenosas, multo minus contagiosas, tales enim absque noxa ab omnibus edi posse jam notum est. Item cuilibet notum est, pisces cocculis de lepanto captos ab omnibus sine metu, aut damno in usum vocari. Vide Fricium de paradoxis medicis item Redi observationes.

XXXVIII.

Ex his observationibus deducitur, quod neque a morsu viperæ, neque ab assumptis quibuscunque venenis humores nostri corporis eorum naturam induant, aut iisdem assimilentur; alias enim tales carnes innoxie in cibum assumi non possent. Præterea constat, in fodinis exhalationes esse mor-

bosas quidem, sed non contagiosas. Ex quibus simul sumptis deducitur, contagium quidem ad venena non vero venena ad contagium reduci posse.

XXXIX.

Si vero de morsu canis rabidi difficultatem aliquam in contrarium moverë conaris, nihil probas; quia hydrophobiam aut quemcunque alium similem affectum pro aliqua specie febris malignæ contagiosæ agnoscimus; unde etiam merito ad morbos contagiosos reduci potest, & debet; experientia enim constat, hunc morbum in canibus tempestate calidissima, quin imo aliquando ex causa interna generari; qui etiam in homine aliquando a causa interna, uti aliæ febres malignæ, oriri potest. Tales observationes legi possunt in act. nat. Cur. cent. 3. p. 112. Item Dec. anno 6. obs. 38. Aliud autem est de morsu viperæ, scorpionis, vespæ, & aliorum; quia non memini talem morbum alteri communicatum fuisse.

XL.

Secundo Clariss. Sydenham, aliique practici observant, in morbis epidemicis contagiosis quandoque contraria remedia requiri, eo, quod illa, quæ in una epidemia prosunt, sæpe in alia obsint; verum si omnes morbi contagio si a prædicto sale alcalino volatili acri dependerent, tunc sufficerent eadem semper remedia, quia eadem semper esset causa.

XLI.

Tertio observationibus uti jam diximus constat, miasma contagiosum corporibus diu in- & adhærere posse; adeoque signum est illud non esse volatile; alias tamdiu in uno loco coerceri non posset.

XLII.

Tandem ultimo quæstionibus superius propositis per hanc sententiam minus quam per quamcunque aliam satisfieri poterit. Nos probavimus aliud esse miasma pestilentiale, aliud variolosum, & aliud venereum; item aliam luem bovinam, aliam caninam, & sic de reliquis; adeoque hæc contagia specie differre diximus, sed quomodo ab aliquo simili miasmate, quod in sale alcalino volatili consistit, diversæ species contagii dependere possint, concipere non valemus; etenim in hoc miasmate aliam mutationem, aut differentiam nobis imaginari non possumus, quam quod unum magis volatile, aut acre sit, quam alterum; notum autem cuique est, magis & minus non mutare speciem; adeoque a tali miasmate tam diversæ morborum species oriri non possunt.

XLIII.

Ast dices: experientia constat, primo, in morbis contagiosis humores nostri corporis ad putredinem, & alcalinam naturam tendere; ergo signum est, miasma illud contagiosum pariter alcalinæ esse naturæ. Secundo experientia pariter nos docet, tempore pluvioso, & humido, item in locis,

ubi humidum prædominatur, grassari morbos epidemicos sæpe contagiosos; hoc vero ideo fieri videtur, quia humidum prædominans disponit ad putredinem, putredo vero maximam partem consistere videtur in natura alcalina, adeoque ex omnibus his concludi poterit, miasmata contagii esse potius alcalinæ quam alterius naturæ.

XLIV.

Ad primum respondemus, necdum demonstratum esse, ut dein patebit, dum de putredine sermo erit, in morbis contagiosis humores nostri corporis esse naturæ alcalinæ. Interim quamvis concederemus, nihil tamen exinde evincitur; quia iste esset potius effectus contagii, quam ipsum contagium; adeoque esentia contagii debet esse aliquid aliud; secus enim admittere deberemus, quod quodlibet corpus putridum vel sit contagiosum, vel quod una putredo specie ab alia differat, sicut unum contagium ab alio specie differre diximus.

XLV.

Ad secundum vero respondemus, tempestates pluviosas, & humidas maximam partem disponere ad morbos epidemicos, ut rheumaticos, sed raro ad contagiosos. Nam ad hoc ut alicubi exuberans humiditas morbos contagiosos causetur, necesse est, ut vel miasmata maligna secum ferat, aut ibidem inertia latentia offendat, sicque foveat & in actum deducat; ni hoc non fiat, grassabuntur morbi epidemici, sed non contagiosi. Experientia autem quandoque oppositum docet, constat enim, quod exundatio Nili morbos contagiosos, ut pestem abigat; quia tunc sole signum cancri subeunte, & septemtrionali plaga fumigante Etesiæ flare incipiunt, qui campsinos ventos, miasmatum pestiferorum vectores expellunt & abigunt. Illa vero, quæ hic de putredine afferuntur, patebunt clarius dum de putredine disseremus.

XLVI.

Cum itaque omnes superius allatæ sententiæ phœnomenis, & superius propositis de contagio quæstionibus minus apte respondeant, cogitandum est de alia, quæ hæc omnia facilius, & ad ductum naturæ conformius expediat; talis causa materialis contagii verisimilius est miasma verminosum; seu principium aliquod seminale verminosum specie diversum; a principio mundi a Deo productum, unde morbi contagiosi originem habent, & propter quod ipsi, uti plantæ, inter se specie differunt.

Miasmata contagiosa a principio creationis jam fuisse producta est Muratori nel tratato della peste, Plateri, Hartsœckeri, Sydenhamii aliorumque sententia; sed qua ratione etiamnum vigeant, propagentur, & multiplicentur, diversa semper fuit sentiendi ratio; fateor, nostram, quam adduximus sententiam ab aliquibus celeberrimis viris jam indicatam, quadantenus tritam fuisse, sed longe diversa methodo, & debili valde argu-

mentorum, & experimentorum apparatu; unde factum est, ut hucusque neglecta, aut superficialiter tantum pensitata fuerit.

Superius jam diximus, quod dum tempestas humida, & pluviosa diu perseverat, sed præcipue dum austri, aut Evro-noti flare non desinunt, quod nimirum tunc diversa seminia adferantur, & alia hinc inde latentia foveantur, & evolvantur, unde dein fit, ut plurima seminia, quæ alias hinc inde sterilia latent, sobolescere incipiant, adeoque innumerabilia animalcula exinde generentur. Hæc animalcula quam plurima deponunt, seminia, ex quibus pariter, si debitus fotus adsit, alia evolvuntur animalcula. Talia seminia seu ovula sunt maximam partem tam exilia, & tam levia, ut in aëre hinc inde volitare, & nunc ad unam, nunc ad aliam plagam deferri valeant, quæ dum humidum, aliumque sibi congruum nidum offendunt, in eodem foventur & evolvuntur; quare nemo mirari debet, si in locis humidis, paludosis tam frequentes muscæ, scarabæi, squilæ, scrophulæ, hirudines, sed præcipue illud chrysalidum genus, culices appellatum, aliaque quam plurima nudis oculis invisibilia animalcula reperiantur, & exuberent.

XLVII.

Ex quo etiam patet ratio, quare morbi contagiosi, sive endemice, sive epidemice in similibus locis maximam partem grassentur. Item ex his patet vera causa contagii antecedens, concomitans, materialis & formalis. Item ex his deducere possumus talia semina contagii ad diversas plagas ab austris transferri posse, ibique morbos contagiosos causare. Talem constitutionem epidemicam & pestilentialem describit Hipp. lib. III. sect. III.

XLVIII.

Verum ut hæc, quæ hucusque dicta sunt, facilius intelligantur, & ne asserta sine demonstratione esse videantur, necesse erit tum ratione cum experimentis thesim nostram ultro corroboraræ, & quædam hic præmittere, ex quibus tanquam legitima consequentia nostra sententia deducatur.

XLIX.

Animalcula, quorum jam meminimus, quanto magis decrescunt mole, tanto magis crescunt numero, prout enim illorum moles est vix perceptibilis, ita eorum multiplicatio est incredibilis; hæc quæ dixi, passim vider possunt in operibus Clar. Lœwenh. sed præcipue in Lib. arcan. natuæ, epist. 96. p. 41. & alibi, aliosque Clar. Autores; ubi unicæ guttulæ aquæ dicuntur ad minimum 2 750000, animalculorum inesse; sed quæso quid dicendum erit de horum animalculorum ovulis, & de horum ovulorum futuris fœtibus? & sic deinceps, quid tandem de ipsorum organis? idem enim Celeberrimus Autor statuit, millies millium tilium animalculorum myriades non æquare unum arenæ granum. Hæc sunt quidem nostro debili ingenio

inconceptibilia, verum admissa materiæ divisibilitate in infinitum, infinitæ potentiæ congrua, & possibilia judicare debemus. Unde merito fatemur infinitam Dei potentiam magis elucescere in minimis, quam in maximis. Ipse Leuwenh. in epist. 73. fatetur, plus sapientiæ requiri ad formationem exigui muscæ, quam ad magnum producendum equum. Item Plinius Lib. 11. de Insectis: *turrigeros elephantorum miramur humeros, taurorumque colla, & truces in sublime jactus, tigrium rapinas, leonum jubas, cum earum natura nusquam magis, quam in minimis tota est.*

L.

Ut vero hæc clarius pateant immorabimur parumper considerantes ortum omnium animalium, & plantarum: multi Physicorum non erubescunt asserere, quædam animalcula, & quasdam plantas originem habere non ex seminibus sed ex putri, seu ex motu ilso intestino, & confuso, qui in putredine observatur.

LI.

Veruntamen præter rationes, quæ communiter huic sententiæ opponi solent; invenio unam a paucis notatam, sed irresolubilem. Videlicet; omnibus notum est, tam plantas quam animalia, eorumque seminia constare certis partibus, & organis affabre & ordinate ad suos fines dispositis, ut non tantum inconceptibile sed etiam impossibile appareat, talia organa ab aliquo confuso motu, & fortuito particularum concursu emergere & coalescere posse; secus eodem & quidem majore cum fundamento dicere potero etiam majora corpora ex tali fortuito motu & particularum concursu coalescere, adeoque potero, asserere, solem, lunam, terram, planetas, stellas, aliaque majora corpora ex tali fortuito particularum motu, & concursu coagmentata fuisse; quod assertum non tantum illam damnatam Epicuri, & Democriti sententiam, sed verum atheismum sapit; etenim si admittas minimas mirabiles machinas (in quibus paulo superius diximus majus esse artificium) a tali fortuito atomorum, & particularum concursu exurgere posse, multo facilius poteris admittere idem esse posse in majoribus machinis.

LII.

Præsupposito igitur hoc infalibili fundamento, omnia animalia & vegetabilia originem ducere ex suis propriis seminibus, debent pariter admitti, omnia organa in seminibus jam ruditer delineata esse. Item debent admitti nulla semina produci de novo. Utrumque hoc assertum debet tanquam certum deduci ex antea dictis, quia sicut ideo nullum animal, aut planta ex fortuito particularum concursu coalescere potest, quia certis, & ad proprios usus destinatis constat organis, ex eadem pariter ratione nullum semen in rerum natura ab aliquo partium poterit produci motu, quia iisdem mirabilibus constat organis, ruditer delineatis, neque enim

alia assignari potest differentia, nisi quod tales partes, & organa in uno magis, in altero minus explicata adsint.

LIII.

Si itaque nullum in rerum natura semen producitur de novo, debet necessario admitti, omnia hæc a principio mundi creata fuisse, nunc vero unum ex altero evolvi; adeoque sequitur, quod omnia semina, quæ a principio mundi ad hæc usque tempora jam erant, & quæ in posterum in rerum natura erunt, in primigeniis illis seminibus jam physice contenta fuerint, & quod ex illis reliqua tantum evolvi debeant. Pariter sequitur, quod omnes homines, qui a creatione mundi ad hæc usque tempora erant, & qui in posterum erunt, in ovario Evæ jam ruditer delineati extiterint.

LIV.

Quæ omnia cum evidenter ex data sententia deducantur, nisi ut superius diximus, in atheismum incidere velimus, mirum tamen est, quod semina jam toties & toties evoluta, notabilem aliquam jacturam in sua diametro, & volumine passa fuisse non observentur; quod non nisi ex principiis de infinita materiæ divisibilitate deduci potest.

LV.

Ast dices: ad quid sunt hæ argutæ, & laboriosæ cogitationes? R. Falleris si credis, nos extra propositum nostrum hac ratione evagari; hæc enim sunt maximum nostræ de contagio sententiæ fundamentum; quia sic nulli ab omni præjudicio alieno paradoxum videbitur superius allatum assertum; quo Lœwenh. aliique celebres viri ostendunt in una gutta aquæ, cerevisiæ, vini & c. 2750000. animalculorum contineri; sic enim quemadmodum multiplicatio vegetabilium per aliam semper & aliam evolutionem seminum fieri debet, ita pariter innumerabilis animalculorum multitudo, quæ in liquidis observatur, ab eadem evolutione dependeat, necesse erit.

LVI.

Hoc autem adhuc clarius patebit, si vegetabilium propagationem paulo intimius perscrutemur: etenim experientia constat ex unico semine Zeæ 2000. alia una evolutione evolvi; item ex uno semine Innulæ 3000. alia; ex uno semine Helianthi 4000. ex unico semine papaveris 32000; & tandem ex unico semine nicotianæ 40320. alia semina provenire & evolvi. Vide Linnæi fundamenta Botanic. si hæc semina ex unico semine jam educta iterum, & aliquoties terræ ad germinandum committantur, exurget profecto exinde numerus indefinitus seminum, quæ omnia in unico illo supra dicto semine continebantur; qui numerus major erit numero animalculorum in unica gutta v. g. aquæ contentorum.

LVII.

Cum liquæ prædicta innumerabilia animalcula in liquidis deprehensa ex propriis seminiis originem habere debeant, cogimur necessario admittere talia seminula, vel ab externo advehi & liquidis communicari; vel liquidis jam insesso & in illis, quasi sterilia hærere donec certæ causæ adsint, quo illorum evolutioni inserviant. Hic loci nolumus adhuc disquirere, aut determinare, an talia seminia liquidis ipsis insint, an vero iis ab externo non ultro advenient, & communicentur; quia de his disserendi alibi erit locus; hic vero principem causam attingere & examinare debemus, quæ huic animalculorum in corporibus multiplicationi, & evolutioni famulatur, vel ut clarius loquar, cum qua conjungitur; talis vero causa communiter ab autoribus assignatur esse putredo, sed quid vere sit putredo a nemine determinatur, aut saltem valde insulse explanatur, & plerumque effectus pro causa assumi solet. Interim hic insinuandum est, quod natura contagii intime cognosci non possit, nisi prius noverimus quid sit putredo, quare sit. ("Tractatus I" p. 44.)

Bestimmungstabelle der südamerikanischen Arten der Gattung *Chalcodermus* Schönh.

(Coleoptera: Curculionidae: Cryptorhynchinae.)

Von Dr. C. Fiedler, Suhl i. Thüringen.

(10. Beitrag zur Kenntnis der amerikan. Cryptorhynchiden.)

Schluß [1]).

74. Elytr. schwarz, meist dunkelmetallisch glänzend, manchmal dunkelrotbraun, dann aber ohne schwarze Flecken 75

75. Elytr. mit außerordentlich großen, ovalen, tiefen Gruben, die die Interst. einengen und diese wellig und unregelmäßig erscheinen lassen. Körperform subrhomboidal, matt erzglänzend, der Proth. doppelt breiter als lang, mit schwach gerundeten Seiten, vorne plötzlich winklig verengt, mit groben Streifen und Rillen versehen, die vorne auf dem Discus der Länge nach ± parallel verlaufen; Elytr. seitlich unter und hinter der Schulter stark und stumpf zahnförmig erweitert, die Interst. sehr schmal und scharf erhaben. Augen zusammenstoßend, Rüssel kräftig, wenig gebogen, beim ♂ wenig, beim ♀ bedeutend länger als Kopf + Proth.; Beine kräftig, die V.- und H.-Schienen in den äußeren $^2/_3$ erweitert und crenuliert, die M.-Schienen innen in der Mitte mit einem deutlichen Zahn: 36. ***fossulatus*** sp. n. [2])

[1]) Anfang erschienen in Arb. morph. taxon. Ent. Berlin-Dahlem, **3**, 280 bis 302, 1936.

[2]) Paratypus im Deutschen Entomologischen Institut, Berlin-Dahlem.