

An English translation of the Latin preface of Brunner's 'Experimenta nova circa pancreas' (1683)

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The Latin preface of Johann Conrad Brunner's 'Experimenta nova circa pancreas' was translated into English. In the preface, Brunner described a series of preliminary experiments including splenectomy, gastrorrhaphia and an observation of acute opium intoxication. He also cited Malpighi's description of polydipsia and polyuria of a splenectomized dog, and wrote that he observed similar phenomenon. The translation casts serious doubt whether Brunner in fact observed a transient diabetic state due to pancreatectomy.

New Experiments on the Pancreas

Preface

(1)*1 Seneca said; "Those who lived before us performed much, but not all; many of their works have hitherto been reserved, and will be reserved; and the opportunity to add something to it will not be shut up for anyone who comes even after thousand generations."

The criticism of this philosopher, though it has perpetual importance and influence in learning and art, has certainly had and will have much more in medicine which grew for securing the safety of human being.

It could be said that, since the time when the life of human

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being was undeveloped and uncivilized, medicine had been enriched and refined by natural ability, intelligence or experience, and thus became more reliable than ever. Surely, as Cicero testified, all of the most recent events are most of all to be corrected and emended. In our days also, pancreas came to the eyes of the well-attended men of science. They approached pancreas and well performed the anatomical service as an obligation, though the anatomy, irrespectively of its kind, of the slaves or of the old, used to be condemned as a cruelty. Thus, people came to be enlightened on the greater dignity of the service. Who could have imagined that medicine begins under the auspices of anatomy?

(2) It is, however, not easy to enlighten human mind; tender mind used to have been stained with much prejudgement coming from the instruction and recommendation of the great scholars. Indeed, the discipline and reasoning of the great scholars have powerful motive and authority, and are apt to drive the minds unduly towards their own views.

I would say that pancreas, which is by no means the last of all glands and has been discussed repeatedly since a few years ago, may well undergo the same fate. As such, deeply believing and assuming in the name of medicine, we could be easily misled by the allurements of our own judgement and by flattery of our own ingenious speculation.

In fact, as excellent van Helmont said, many men are amply self-satisfied as long as they understand through books of others and remember views of learned persons; they have skill in pursuing philosophy in the same way as they transplant vine branch from other's vine yard. Consequently, vivid sharpness of genius has grown faint, and we are now extinguishing the torch which was handed over to us by the ancients.

(3) In 1673, while I was in Paris, I often was acquainted with learned people, and in communion with them we occasionally discussed on the pancreas. In fact, when public assembly and banquet were held, so-called men of sagacity seethingly discussed in what way the concoction and dissolution of food should mechanically be de-

monstrated when it was treated with the decanted pancreatic juice foamed up*² with bile in the small intestines. It has also not so far been adequately known how useful the pancreas was and whether the pancreas was the source of the fluid extremely necessary for the life; it has by no means distinctly been demonstrated whether every condition of health depends on natural economy, and whether the health suffers destruction and almost total collapse when the pancreas is destroyed and corrupted.

Finally, however, even if these deeper drugnets proved to be suitable both in theory and practice and an idea opportunely came to the mind, nobody should approve it thoughtlessly, especially in the medical matter in which even worshiped men might occasionally be involved into errors of others.

(4) Accordingly, I have determined to attack Nature herself, which always fulfils her great promise, and by taking off prejudice I have determined to dare everything by our special privilege. I have long been deliberating in what way I could make this matter resolved.

(5) Although it might be precisely observed on the dead body at what site the soul had worked out its operations, it is not adequate here for me to observe parts of the expired dead body. Afterwards, almost everything was ascertained in human body, nevertheless sometimes we are told less precisely from human body.

As most learned Wedel said, time runs short for me to introduce all of the diversified views of anatomists on the usefulness of spleen, gall and pancreas. Since Nature, by her inadequate machinery and amazing simplicity, performs her operations beyond human ability, functions and actions of the parts of the body become known by the careful and continuous inspection of the organs.

(6) Now turning to the experiment at this fortunate moment, we have to long for distinct views on the usefulness of the parts of the body. In this work, truly I would say after great Harvey, worry and exhaustion would not come to the mind as long as we look at pleasure of pursuing the truth which compensate distaste of the work.

(7) Accordingly, I suport the use of dogs, on which I had tried successfully exstirpation of the spleen to answer many questions of its

usefulness, and I had got clear of the difficulty of the problem after various intellectual discussions. As a matter of fact, because fewer vessels wash pancreas than those wash spleen, I made no doubt of the possibility of the experiment nor of the promising *in vivo* ablation of the pancreas. It is established that if the organ was ablated or its soundness was destructed the actions of an organ of the body are stopped and abandoned.

Hence, I chose, for the experiment, exactly the very dogs which common people fed out of curiosity and usefulness; I began to do the experiments in any event by modern method so as to make the experiment worthwhile.

(8) According to the mandate of the most Christian King, however, surgeons must be experienced in the use of scalpel when they demonstrate their operations in public. Although the observer does not so claim, he seems to care for skilled hand for this sort of work. As a matter of fact, Cicero said; "neither medical doctors nor orators might have success without practice and exercise."

(9) As such, I performed the risky part of the operations, which falls to the surgeons first in their practice and is called 'gastrorrhaphia' in Greek.*^{3,4} I made incision on the abdomen to drag out intestines. The incision*² is somewhat small and about one and a half inch. I stitched together the wound of the intestines as indicated by the furriers. I cut short the portion of the omentum after I ligatured the vessels. I cleaned the intestines and put them back. I sewed up the wound which was left tore apart; I made an opening as an outlet of pus. I protected the wound with a plaster, applied patch, wrapped up with bandage, and made the wounded dog free with safety cord.

(10) I prepared hastily for another dog;*² when I returned an hour later, I found the dog was crying miserably, sitting on his buttocks, and straightening his anterior paw. The bandage was gnawed and untied, and the intestines hanged down from the wound which attached cold, purple and gangrenous adjacent tissues. Anybody who is presently engaged in the field of scalpel would not hardly embarrassed if only he anticipates Hippocrates' prognostic aphorism section 6-24: "If one of the thin intestines be dissected, it does not coalesce."*⁴

(11) Nevertheless among domestic dogs which were loved as a partner, some gradually regained consciousness in three days, licked their own wound to heal it by themselves, convalesced, ate as before, and became agile and vigorous.

(12) When the dog endured the first blow to the end, it seemed desirable to gamble among others with his second fate. Therefore, we managed to do the thoracic parentheses in the same manner as surgeons performed. Perforating between the second and the third rib of the mongrel dog's chest, we injected milk into the chest cavity with a syringe, and subsequently brought it out from there through a silver cannula. The dog convalesced from this operation without much difficulty. Damaging an artery of posterior leg and tying it up by the same procedure as skillful surgeons usually employ, we learnt the method of healing aneurysm in the same subject. Having manly struggled through this third danger, the dog now challenged the fourth danger.

I resected spleen as above mentioned; I made an incision of agreeable magnitude in the left hypochondrium, searched diligently for the spleen which was got hold of without much difficulty, took hold of the vessels with cord and tied them up, cut off the ligatured spleen, put the remainder back in the pristine site, and sewed up the wound to bind together as already mentioned above. Now, the dog overcame this damage and survived ever since. In the meantime, the dog exhibited to us the phenomenon brilliantly observed by sharp-eyed Malpighi. It was observed that usually the dog urinated frequently, was thirsty, and also drank plenty of water in proportion to the flood of urine. In all other respects the dog appeared healthy.

(13) At last, I forced the dog to swallow reluctantly one scruple*⁵ of opium in the form of pill. This satisfied our curiosity about pharmaceuticals. After copious salivation he appeared intoxicated and rigid just as seized with tetanus; nevertheless he stood insecurely on his vacillating feet and threatened with falling down from time to time: after a few hours he eluded the effect of this drug and became vivacious.

Now, the pancreas both in theory and practice seems to have

been offered only small space in the writings of almost all authors. This is the very point which our examination experimentally attacked. I think it worthwhile to place this matter on the anvil, to evaluate what (theory) seems certainly influential and what is to be rejected. Accordingly, to this martyrdom*⁴ of anatomy I immolated the same dog which already unshakenly endured all of the blows as if he had been sent by Apollo himself. Thus, as far as I know, I did by no means vulgar experiment. Of what kind it was, I shall speak now.

- *1. These numbers were added by the translator for the sake of further studies. The numbers correspond to the numbers of the original paragraphs.
- *2. The meaning of this part is somewhat ambiguous and needs further study.
- *3. 'Gastrorrhaphia' means suture of a perforation of the stomach.
- *4. Brunner wrote this part in Greek.
- *5. One scruple is equivalent to 1.3 gram.

This translation is based on the first (1683) and the third edition (1722) of Johann Conrad Brunner's 'Experimenta nova circa pancreas'. Those two editions have the same preface. Microfilms of the texts were given by the courtesy of British Museum, London, for the first edition and by the courtesy of National Library of Medicine, Bethesda, for the third edition. The translator would like to express deepest gratitude for their generous assistance.

Summary

The Latin preface of Johann Conrad Brunner's 'Experimenta nova circa pancreas' (1683) was translated into English. In the preface, Brunner described a series of preliminary experiments including splenectomy, gastrorrhaphia (suture of a perforation) and an observation of acute opium intoxication. He cited Malpighi's description of polydipsia and polyuria of a splenectomized dog, and wrote that he observed similar phenomenon. The translation casts serious doubt whether Brunner in fact observed a transient diabetic state due to pancreatectomy.

Experimenta Nova Circa Pancreas

Praefatio

Multum egerunt, qui ante nos fuerunt, ait Seneca, sed non peregerunt, multum adhuc restat operis, multumque restabit, nec ulli nato post mille secula praecludetur occasio aliquid adhuc adjiciendi. Quae sane Sapientis animadversio, si qua in disciplina aut arte pondus & auctoritatem habet, in Medicina ad incolumitatem mortalium retinendam nata habuit, habebitque semper maximam. Quod enim aevum tam rude aut incultum unquam fuit, quo non aliquod Medicina, sive ab ingenio, sive ab arte, sive ab exercitatione additamentum, seu ornamentum, quo locupletior quàm antè, fieret, acceperit? *Certe enim, M. Tullio teste, recentissima quaeque sunt correctæ & emendata maximè.*

Invenit nostro quoque aevo *Pancreas* Viros in Arte celebres, qui abditum illud, diuque abjectum & ad servile à priscis Anatomicis damnatum munus atque officium in lucem revocarunt, ad majorem dignitatem, quin maximam extulerunt, ut Medicinam nonnisi sub hujus auspiciis ordiendam nonnulli sibi imaginati fuerint.

Nihil autem tam facile allicit, tenerosque animos praejudiciis magis imbuat ac tantorum virorum institutio atque applausus. Hi quippe rationum suarum momentis, & auctoritate, qua pollent, ingenia facile superant, inque suam rapiunt sententiam. Hanc, inquam sortem subiit paucis ad hinc annis decantatum *Pancreas*, inter glandulas haut postrema. Sic creditum, sic factum fictumque est à quibusdam magni Nominis Medicis, ut suis rationum lenociniis & ingeniosis speculationum blandimentis incautum facilè deceperint. Multi enim, inquit *Nob. ab Helmont* sibi abunde satisfactum arbitrantur, dum ex aliorum libris sapiunt, doctorum virorum sententias memoria tenent, & sic ex traduce philosophari sciunt. Ita certè vivida ingenii acies languescit, & lampadem, quam nobis tradiderunt veteres extinguimus.

Anno 1673, versanti *Lutetiis Paris.* frequens mihi ac familiare cum

nonnullis viris eruditis tum temporis commercium, multus quoque de Pancreate sermo fuit. Nec enim conventus publici atque solennes hac in re otiabantur, dum sagacia quaedam ingenia, quomodo Ciborum concoctionem seu dissolutionem mediante decantata Succu pancreatici cum bile in tenui *intestino effervescentiâ* vel mechanicè demonstrarent, fervidè disceptârunt. Nec enim sufficit hactenus Pancreas nescio cujus salutaris & ad vitam summè necessarii laticis fontem constituisse, unde omnis oeconomiae naturali salus promanet, sed & quomodo destructo aut vitiato illo labes in eandem ac totalis penè ruina recidat, haut obscure indigitarunt. Tamden verò quum haec altioris indaginis cùm in Theoria tum Praxi viderentur, opportunè mentem subiit cogitatio, nemini temere esse assentiendum, in rebus praesertim Medicis, ubi aliorum errores interdum pelle humana piandi veniunt.

Ipsam proin Naturam (promissis majora semper persolventem) adire constitui & exutus praejudiciis proprio quidlibet audendi privilegio, quomodo rei certus fieri possem diutius deliberavi.

Nec mihi sufficit hic partem defunctam & emortuam conspexisse, cùm certum sit nos in Cadavere tantùm speculari quo in loco anima suas exegerit operationes. Hinc postquam inventa sunt in corpore humana quasi omnia, interdum tamen minùs certi inde reddimur. Dies me deficeret, si de Lienis, Bilis, Pancreatis usu tot diversas Anatomicorum sententias in proscenium proferrem, inquit *Doctiss. Wedel.* Etenim partium munia & actiones non perpetuo ex diligenti & atoma etiam organi inspectione innotescunt, cum Natura exiguis machinis, hisque simplicibus miras, ultra humani ingenii captum edat operationes.

Ad Experimenta tandem me auspicatò converti, quibus unicè opus est, si de partium usu sensuum evidentiâ certi fieri exoptamus. In hoc opere, verè cum magno *Harvaeo* dicam, non tantùm fatigari, sed & faticere suave est, ubi operis fastidium ipsa intuendi voluptate abundè compensatur.

Alebam tunc temporis canem, in quo Lienis extirpationem ob nonnulla circa ejus usum dubia felici successu expertus fueram, adeoque post varias mentis discussiones jam è difficultate rei emergere mihi videbar: etenim cùm Pancreas non plura quàm lienem alluant

vasa, etiam Experimenti possibilitatem & Pancreatis *in vivo* ablationem mihi promittere non dubitavi: ratus, ablatâ parte, aut saltem destructâ cessare ejus in corpore actionem atque deficere. Elegi proin eundem Canem, ob Experimentorum, quae sustinuit multitudinem celebrem, quae cum curiosa sint atque utilia, saltem recens Arti initiatis, subnectere operae pretium duxi.

Primô autem ferri aciem expertus est, dum Chirurgi ex mandato *Regis Christianiss.* publicè operationes monstrabant suas. Nec enim spectatorem tantum agere, sed & manum ipsi operi admoveere consultum videbatur. Etenim *nec Medici nec Oratores quicquam sine usu & exercitatione proficiunt*, ait Cic.

Periculum itaque feci Operationis, quae Chirurgis in demonstrationibus suis prima occurrit, *γαστροῤῶφία* dictae, Influxi vulnus in abdomine, intestina protraxi foras; tenuium quoddam ad unciam unam cum dimidia sauciavi; sutura pellionum dicta vulnus intestini consui; omenti portionem postquam vasa ligaveram resecuri, intestina mundavi ac reposui: vulnus suturâ interscissa constrinxi, turundam foramini pro puris exitu relicto indidi; emplastro obtexi, adaptavi splenia, fasciis obvolvi & ita saucium, vinculis solutum missum feci.

Ptopeavi adhinc ad alia: post horam reversus inveni Canem miserè vagientem, natibus insidentem, pedibus anterioribus erectis, intestina verò arroso atque soluto vulneris nexu propendebant ex vulnere attactu gelida, purpurea, sphacelationi proxima. Qui modo in acie novaculae versabatur, nunc pene agonizans nonnisi *Hippocratis* prognosticon *sect. 6 Aph. 24.* exspectare videbatur; *Ἐντέρων ἡ δὲ διακοπῆ τῶν λεπτῶν τι, οὐ συμφέεται.*

Interea inter domesticos, quorum consortium amabat intra triduum sensim ad sese rediit, lambendo vulnus ipsemet sibi medebatur, convaleuit, ut antea comedit, agilis vegetusque extitit.

Postquam ita primam pertulit plagam, & qui secunda vice, quo Chirurgorum operam imitaremur, luderet aleam prae aliis exoptatus videbatur. *Paracentesin* itaque *Thoracis* eo quo Chirurgus monstraverat ritu administravimus. Pertuso inter secundam ac tertiam costarum notharum thorace, lac in cavitatem ejus syringâ injecimus, ac inde iterum per cannulam argenteam prolicuimus. Tandem vulnus ritè

deligavimus ac persanavimus. Ab hac operatione haut aegrè convaluit. *Aneurisma* curandi modum, vulneratâ in cruce posteriori arteriâ, eaque quae à Chirurgis peritis fieri solet ratione deligatâ, in eodem subjecto didicimus. Tria haec pericula, masculè eluctatus modo incurrit quantum. *Lienem* enim uti jam supra innui ita resecuri: Vulnus congruae magnitudinis in hypochondrio sinistro excitavi, in lienem sedulo inquisivi, quo haut difficulter potitus, vasa ligavi comprehensa vinculo, trans ligaturam lienem abscidi reliqua in pristinum locum reposui, vulnus modo jam supra dicto cosui ac deligavi. Tandem & hanc idem qui pridem Canis superavit jacturam. Interea phaenomena à lynceo *Malpighio* annotata luculenter nobis exhibuit. Illud praeprimis observare fuit, quod crebriùs solito minxerit; bibulus, pro ratione proluviei Urinae largius quoque hausit aquas. Caetera sanus extitit.

Opii denique ☉j•(quò & in re pharmaceutica Curiositati nostrae litaret, postquam *Pancreas* jam resecuram) formâ pillulari ingessi invito. Post copiosam salivationem temulentus apparuit, rigidusque ceu tetano correptus: incerto tamen stabat pede vacillans ac subinde lapsum minitans: post aliquot horas & hujus pharmaci vim elusit vegetusque evasit. Tandem verò *Pancreas* cum in Theoria atque Praxi omne fere apud plerosque ferre punctum videretur, & idem quod examen nostrum experimentale subeat, ac sub incudem reponatur, quo nempe appareat quantum hoc valeat, & quid ferre recuset, operae pretium existimavi. Eundem proin Canem qui tot antè plagas inconcussus tulerat ceu ab ipso Apolline missum, verum Anatomiae *μάρτυρα* huic operi immolavi, & quantum quidem scio haut vulgare Experimentum feci. Quale autem illud fuerit, nunc eloquar.