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Translating the academic article in the late 17th century

David Banks

Université de Bretagne Occidentale, France

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Abstract

The first academic periodical was the *Journal des Sçavans* whose first issue appeared in Paris in January 1665. This was followed two months later by the *Philosophical Transactions* in London. The *Journal des Sçavans* covered the whole range of academic disciplines and was made up mainly of book reviews. The *Philosophical Transactions* was restricted to science and technology and was based on the contents of the editor's correspondence. The academic communities in France and England were in contact and aware of each other's activities. The first issue of the *Philosophical Transactions* includes an item translated from the first issue of the *Journal des Sçavans*. Previous study, including consideration of thematic structure and process types, has shown that the English translator follows the French text fairly closely. The first translation from English to French appears in the following year. In this case the translator is highly selective in choosing those parts of the original text to include in his French version. The present study looks at the situation 10 years later. In 1675, the *Philosophical Transactions* produced 11 issues, including a number of translations, two of which were translated from the *Journal des Sçavans*. The latter periodical produced 23 issues including 10 items translated from the *Philosophical Transactions*, three of which have been randomly selected for his study. It is found that the strategies used in the first translations are maintained here: the English translator follows the French text closely, while the French translator uses a strategy of selective translation. It is hypothesized that the French translators are adapting the text for a different type of readership, which might be seen as an early form of localization.

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Keywords: *Journal des Sçavans*; *Philosophical Transactions*; Process type; Seventeenth century; Thematic structure; Translation

1. Introduction

The first ever academic periodical to appear was the *Journal des Sçavans* whose first issue came out in Paris on 5 January 1665. Its editor was Denis de Sallo. It was clandestinely state sponsored, under the impetus of Colbert, Louis XVI's first minister, who wanted to control new knowledge, which he perceived as potentially dangerous for the state. It covered all the known disciplines of the time, and was mainly made up of book reviews (Morgan, 1928; Gignoux, 1941; Banks, 2017a). This was followed two months later, on 6 March 1665 by the *Philosophical Transactions*, which appeared in London. This was the brainchild of its editor, Henry Oldenburg, and was a private venture, whose object was to augment Oldenburg's meagre income, although it did have the imprimatur of the Royal Society. Oldenburg was the centre of a network of scientific correspondence, and the content of the periodical was based on the letters he received. Since his readership was the members and friends of the Royal Society the content was restricted to science and technology

E-mail address: David.Banks@univ-brest.fr.

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(Bluhm, 1960; Hall, 2002; Lyons, 1944; Banks, 2017a). These remained the two major academic publications in vernacular languages until 1700 when the French *Académie Royale des Sciences* began publishing regularly (Banks, 2017b).

In a previous study (Banks, 2019a), I looked at the first French–English, and English–French translations. The first French–English translation appeared in the very first issue of the *Philosophical Transactions*, and was a translation of a piece that had appeared in the first issue of the *Journal des Sçavans*. The translation follows the French text closely. The first English–French translation appeared in the *Journal des Sçavans* the following year, in 1666. It is a translation of a piece which had previously appeared in the *Philosophical Transactions*. It does not translate the whole of the text, so that there are numerous gaps. Hence it is more like a selective translation or adaptation of the original.

The object of this study is to look at the situation 10 years later, that is, in 1675, so see whether the strategies used in those first translations were still in operation ten years on. It is conceivable that that strategies used in the very first translations might have proved to be inadequate, and that as time progressed these could have been modified to produce translations of better quality. While 10 years is an arbitrary figure, it seems reasonable to suppose that after ten years any modifications would have settled down into a relatively established pattern.

In Banks (2019b), I looked at two English–French translations from the 1675 issues of the *Journal des Sçavans* and the *Philosophical Transactions*. The objectives of this paper were to consider the translation strategies used and to draw a parallel with the contemporary notion of localisation in the translation of digital documents. The present paper considers five cases of translation: two from French to English, and three from English to French, including the two considered in Banks (2019b). The main thrust of this paper is on the comparison of the difference between the French–English and the English–French translation strategies. Thus, the present paper considers five translations, whereas Banks (2019b) considered only two, and the objectives of the two articles are different. Moreover, while the overall analysis of the two translations which are common to the two papers is the same, the illustrative examples are different in the two papers.

2. Methodology

I shall consider each of the translations in turn, starting with the French–English examples. I will look at the general structure of the source texts and their translations and then analyse the thematic structure and the process types of finite verbs. Thematic structure is of particular importance since it has been taken to be the driving force of scientific text (Halliday, 1994, 1998; Banks, 2008). Processes constitute the central node of the clause, and the way in which they are encoded creates an essential part of the dynamism of a text (Halliday, 2014; Banks, 2005, 2017c, 2019c). I use a system of five process types, which provides for material, mental, relational, verbal and existential processes, where material processes are physical actions and events, mental processes are events of a cerebral nature, relational processes link two entities or an entity and one of its characteristics, verbal processes are acts of communication, and existential processes are statements of existence. This system does not allow for behavioural processes, which, I feel, do not form a coherent category (Banks, 2016). O'Donnell et al. (2008) have shown that there is a fairly wide range of interpretations of process types within Systemic Functional Linguistics from a more grammatical to a more conceptual pole. My conception of process types is towards the conceptual pole of the possible cline.

3. French–English translation

The *Philosophical Transactions* produced 11 issues in 1675. This includes several translations, two of which are from the *Journal des Sçavans*. These have the following headings:

*A more particular Account of the last Eclipse of the Moon, as it was observed by the Parisian Astronomers, and promised by us in our former Numb III. English't out of the French Journal des Scavants.*¹

An Extract of the French Journal des Scavans, concerning a New Invention of Monsieur Christian Hugins de Zulichen, of very exact and portative Watches.

The first of these I shall call the “Eclipse” text, and the second the “Huygens” text.

¹ Spelling and typography of quotations from the two journals are as in the original as far as possible, with the exception of “long s” which has been replaced by a contemporary “s”.

4. The *Eclipse* text

Appendix A shows the source and target texts side by side. Numbers correspond to the paragraphs of the original, and letters to ranking clauses within paragraphs. Each box of the appendix contains a ranking clause. Hence, for example, 2b is the second ranking clause of the second paragraph. A ranking clause is a clause complex made up of a main clause, plus its associated subordinate clauses, if there are any. A ranking clause constitutes the basic unit for the analysis of thematic structure.

It can be seen that the general construction is virtually the same: all of the ranking clauses are translated in the same order.

In terms of the thematic structures of the source and target texts, differences are few. There are two cases (2b, 3b) where the *Journal des Sçavans* has a finite clause functioning as theme, but in the translation this has become a non-finite clause, as in 2b.

Mais **apres que le brouillard fut dissipé**; la Lune entierement eclipsée parut de couleur rouge brune.

But **that Mist being dispelled**, the Moon totally Eclipsed looked of a colour red-brown.²

And there is one clause in the *Philosophical Transactions* (4) which has a textual theme, where there is none in the *Journal des Sçavans* text. Hence it seems reasonable to say that the thematic structures of the two texts are virtually the same.

Similarly, analysis of the finite verbs and their process types shows that differences are fairly minimal. There are four cases (2a, 2b, 3b, 3c) where a finite verb is translated by a non-finite verb, as in 3b.

... mais comme la blancheur de ce bord **n'estoit pas** encore assez grande, les deux autres Observateurs jugerent ce retour un peu plus tard, l'un à 8. h. 8. m. & l'autre 8. h. 9. m. 30.

But, the whiteness of this limb **not being** then yet great enough, the two other Observers judged this return of Clearness a little later, the one at 8 h. 8'. and the other at 8 h. 9'. 30".

There is one case of a finite verb translated by a prepositional phrase (1c).

... & en suite l'ombre alla s'avaçant de tache en tache jusqu'à l'autre bord de la Lune, suivant l'ordre que **on verra cy-apres dans le detail**.

... and so the Shadow advanced from spot to spot unto the other opposite limb of the Moon, according to the order **below particulariz'd**

There are two cases of a change in process type (1a, 4). In 1a, a relational process has been construed as a mental process in the translation, due to the use of grammatical metaphor in the French, and in 4a a modalized mental process has been construed as relational.

Cela fait voir ce qu'on **doit attendre** des Eclipses de Lune pour la determination des longitudes, lors que les observateurs se contentent de marquer simplement le commencement & la fin de l'Eclipse.

And this shews what **is** to be expected from the Eclipse of the Moon for the determination of the Longitudes, when Observers do content themselves barely to remark the beginning and the end of the Eclipse.

One finite verb in 3a is not translated at all.

A 8. h. 7. le bord qui est aux environs de la tache *Grimaldi*, & qui estoit alors le plus proche de l'horizon, commença à s'éclaircir: ce qui fit croire à l'un des Observateurs que c'estoit le commencement de l'Emersion **& que la Lune sortoit de l'ombre**:

² Relevant parts of examples are in **bold**.

Table 1
Process types in Eclipse text.

	JdS		PT	
Mat	17	30%	14	29%
Ment	18	32%	16	33%
Rel	17	30%	14	29%
Verb	1	2%	2	2%
Exist	3	5%	3	6%
Tot	56		49	

At 8 h. 7'. the Limb that is about the spot *Grimaldi*, and which was then next the Horizon, began to clear up: Which made one of the Observers believe, that it was the beginning of the Emersion.

Table 1 gives the distribution of process types in the Eclipse text.

It can be seen that the distribution of process types is virtually the same for the two texts.

5. The Huygens text

This text is about the creation of the first spring-balance watch and is historically important since it gave rise to a priority dispute between Christiaan Huygens and Robert Hooke. Hooke claimed that he had produced such an instrument much earlier, though there is doubt as to whether he did any more than suggest the idea without actually carrying it through himself (Chapman, 2005; Jardine, 2003).

The source text and its translation are shown side by side in Appendix B. The first introductory paragraph has not been translated, but otherwise, the translation follows the paragraphs and ordering of the original, and except for the first paragraph the themes of the two texts are identical.

Differences in finite verbs and their process types are again minimal. There are four cases where a material process has become relational in the translation (2, 3a, 3b, 4a), two of which involve translating the French verb *tenir* by *be* plus an adjective, as in 3a.

Le secret de l'invention consiste en un resort tourné en spirale, attaché par son extrémité intérieure à l'arbre d'un balancier équilibre, qui tourne sur ses pivots: & par son autre extrémité à une pièce qui **tient** à la platine de l'horloge.

The secret of the Invention consists as a Spiral Spring, fastned by its innermost end to the Axis or Arbre of a poised Balance (bigger and heavier than is usual) which turns upon its pivots; and by its other end to a piece that **is fast** to the watchplate.

It will also be noted that the translation has a clause added in brackets (*bigger and heavier than is usual*) which does not appear in the original.

Table 2 gives the distribution of the process types in the Huygens text and its translation.

The distributions are relatively close, but reflect a slight movement from material to relational process in the *Philosophical Translations* text.

Overall, we can say that in these two cases the translations remain very close to their source text, with a small movement from material to relational in the Huygens text being the only difference of any note.

6. English–French translation

In 1675, the *Journal des Sçavans* produced 23 issues. Ten items were translated from the *Philosophical Transactions*, and of these, three have been randomly selected for analysis for this study. These are:

EXTRAIT DV IOURNAL D'ANGLETERRE, contenant une lettre de M. Ray à M. Oldenbourg touchant les vessies pleines d'air qui se trouvent dans plusieurs poissons.

EXTRAIT DV IOURNAL D'ANGLTERRE, contenant quelques remarques faites & communiquées par Mr. Gregoire, touchant quelques Lacs & quelques Rivières.

Table 2
Process types in Huygens text.

	JdS		PT	
Mat	19	56%	12	44%
Ment	2	6%	–	–
Rel	12	35%	15	55%
Verb	–	–	–	–
Exist	1	3%	–	–
Tot	34		27	

EXTRAIT DV JOURNAL D'ANGLETERRE contenant un extrait d'un mémoire de Paulus Biomonus qui est en Islande, où il répond à quelques questions qu'on luy avoit faites touchant cette Isle.

I shall call these the “Fish” text, the “Lakes” text, and the “Iceland” text respectively.

7. The Fish text

Appendix C shows the Fish text and its translation side by side. It is immediately obvious that, in contrast to the French-English translations, the translation here has numerous blanks, including ten clauses which are not translated at all. On the other hand, the clause complex 1a has been split up into three separate ranking clauses; clauses 1d and 1e have been split differently, and some clauses in the translation are considerably shorter than in the source text.

In terms of thematic structure, there are a small number of differences. First person themes have been replaced by third person themes. The splitting of 1a into three separate ranking clauses gives two extra themes in the translation. In 1e, the theme of the translation derives from the theme of a subordinate clause; in 1l, the theme of the translation derives from a non-thematic non-finite clause; and in 1m, the theme derives from a non-finite clause which occurs within the theme.

There are also a number of differences in finite verbs and process types. There are seven cases (1d, 1e, 1h, 1i, 1k, 1l (x2)) where a non-finite verb and two of a prepositional phrase (1l (x2)) which have become material process finite verbs in the translation, such as this example from 1e.

But though air may be received into the bladder, yet is there a valve or some other contrivance **to hinder** the egress of it; for you shall sooner break the bladder than force any air out by this channel.

... mais que quelque valvule, ou quelque autre artifice de la nature **empêche** d'en sortir. Car on les rompt plustost que de faire rentrer l'air par ce canal.

There are two mental processes which have become verbal processes in the translation (1a, 1b), as in this example from 1a.

I was much pleased and satisfied with the ingenious conjecture I **found** in your *Transactions* of May last, pag. 310. concerning the swimming Bladders of Fishes; and perswade my self that the Author thereof hath hit upon the true use, viz. to sustain or keep them up in any depth of water.

IL **a esté parlé** autrefois dans le Journal des vessies pleines d'air qui se trouvent dans plusieurs poissons, dont l'usage est de tenir ces poissons plus ou moins plongez dans l'eau que ces vessies sont plus ou moins resserrées. Car le poids de l'eau les comprime quand les positions sont au fond de l'eau ...

And there is one case of a mental process, and one of a verbal process (both 1h), which have become relational in the translation.

But I verily **think**, there is in the coat of this bladder a musculous power to contract it when the Fish lifts: For, in many Fishes it is very thick and opaque, like the coat of an Artery (which hath, as Dr. Willis **observes**, such a muscular faculty) as for example in all the Cod kind;

Table 3
Process types in Fish text.

	PT		JdS	
Mat	33	47%	26	63%
Ment	13	19%	2	5%
Rel	13	19%	8	20%
Verb	7	10%	4	10%
Exist	4	6%	1	2%
Tot	70		41	

Il **semble** qu'elles se peuvent resserrer comme des muscles, car leur membrane est fort épaisse en plusieurs poissons: & il **semble** qu'au-dedans elle est souvent revestue d'une substance rouge & musculieuse.

Table 3 gives the distribution of process types for the Fish text and its translation.

The shorter length of the French translation means that there is a substantial reduction in the number of finite verbs, from 70 to 41. Overall, and in terms of the percentage distribution of process types, there is an increase in the percentage of material processes at the expense of mental processes, thus giving the *Journal des Sçavans* text a less human feel.

8. The Lakes text

Appendix D gives a side by side presentation of the Lakes text and its translation. Once again, it is evident that there are numerous gaps where certain clauses have not been translated, and there are many translated clauses which are shorter than in the source text, or in other ways reduced, such as the three clause sequence 2i, 2j, 2k, which is a single clause in the translated version. Overall, there are 31 ranking clauses in the source text, but only 13 in the translation.

First person themes have again been replaced by third person themes, as in 2f.

I have since heard of two other Lakes, one of which is on Lands belonging to my self, called *Loch Monar*, of a pretty largeness, which steddily keeps the same method...

... & il dit avoir appris par plusieurs personnes dignes de foy que la même chose arrive dans deux autres Lacs.

Otherwise, there are three cases (2a, 2b, 2h) where the source text has a subject theme, but the translation has an adjunct theme, as in 2b.

... but **one nights frost** there-after will freeze it all over...

... mais **dés le mois de Fevrier** il se glace tout entier dans l'espace d'une nuit ...

And a further three cases where there is a subject theme in the source text, but a personal pronoun as theme of the translation followed by a verb of verbal process, as in 3d, thus making the original clause the projection of a verbal process in the translation.

... but **it** was soft and warm;

... & il **remarqua** que ce qui tomboit estoit chaud & d'une substance molle.

Clause 2m is an extraposed construction, or thematized comment (Thompson, 2004) in the source text, but a cleft construction, or predicated theme (Halliday, 2014) in the translation.

'Tis observable also, that about the borders of this Lake the Grass keeps a continual verdure, as if it were in a constant Spring, and feeds and fattens beasts more in a week, then any other Grass doth in a fortnight.

Et ce qui est encore remarquable & que Mr. Gregoire a voulu voir luy-même, c'est que la même chose n'arrive pas a plusieurs autres lacs qui sont dans la voisinage & qui se trouvent dans des lieux aussi élevez. L'herbe même est toujours verte proche des bords de ce Lac, comme dans un continuel Printemps.

Table 4
Process types in Lakes text.

	PT		JdS	
Mat	26	36%	16	36%
Ment	7	10%	3	7%
Rel	28	39%	14	32%
Verb	9	13%	8	18%
Exist	2	3%	3	7%
Tot	72		44	

There are then a significant number of differences, and this is true also of the finite verbs and their processes. There are three cases where a relational process in the source text becomes a material (2k, 3c) or verbal process (2a) in the translation, as in 2k.

And this Ice is found on it, though the sun by reason of the reflexion from the hills in that Country **is** very hot...

... il est toujours glacé vers le milieu, même dans les plus grandes chaleurs de l'Esté, quoy que les rayons du Soleil **se réfléchissent** fortement de ces deux montagnes.

There is one case of an existential process which has become relational in the translation (2a).

I had notice of a *Phænomenon*, that I judged odd and considerable in searching into the nature of *Cold*, which is; That there **is** a little Lake in *Straherrick* on the Lord *Lovel's* Lands, which never freezes all over (even in the most vehement frosts,) before February;

PRemierement il parle d'un petit Lac qui **est** dans un lieu nommé Straerssch, qui quelque grand froid qu'il fasse avant le mois de Fevrier ne se glace jamais;

And there are three cases of non-finite verbs (3c, 3g) or prepositional phrases (2a) which have been translated as finite verbs, as in 3c.

And I remember, that at two several times, I being at *Inverness*, walking in the evenings along the bridge over the River *Ness*, a mist of those steams **coming** from the Lake and falling down to us over the river (for there was no mist in any place thereabout but on this Lake and River only,) our haire became all white, like the whiteness of a hoare-frost...

& qu'un jour d'esté se promenant le matin le long de la riviere de Nesse, un grand broüillard **s'éleva** qui luy blanchit les cheveux ...

Moreover, and perhaps surprisingly since the translation is considerably shorter than the source text, the translation adds no less than eleven finite clauses which have no equivalent in the source text.

Table 4 gives the distribution of process types.

Despite the addition of 11 finite verbs, there is an overall reduction from 72 in the source text to 44 in the translation. In terms of the percentage distribution there is an increase in verbal process at the expense of relational process.³

³ It is perhaps worth noting in passing that this text includes what must be one of the first examples of a serious mistranslation in an academic article. It occurs in 4c-4d. May it not be, that by the long infusion in water, descending from hills, which perhaps abound in marle capable to be resolved into small particles by the constant washing of the water, may it not be, I say, that these litle particles do intrude into the cleansed pores of the *Holly*, and so make up that soft stone? And any thing ligneous remaining of the very hard timber, being all incrustated with this marle, may it not thereby be guarded from the action of the fire? *April* 16. 1675. Il est mal-aisé de rendre raison de ce changement; car on ne peut pas dire comme quelques-une l'ont cru, que cette eau descend des montagnes chargée de petites parties de marbre qu'elle a dissoutes; parce qu'il n'est pas possible que ces parties en s'insinuant dans les pores du bois, puissent faire une pierre si molle, & le changer si bien qu'il n'y demeure rien qui approche de la nature du bois que le feu puisse consumer? While the English text puts something forward as a possible explanation, the translation says that this explanation is totally impossible!

Table 5
Correspondence of paragraphs of translation and source text.

JdS	PT
1	2a, 2b
2	7d, 7c, 7f
3	5a
4	4c, 4a
5	6f, 6j, 6i
6	8a, 8d
7	6e

9. The *Iceland* text

Appendix E shows the *Iceland* text and its translation side by side. It is immediately obvious that once again there are numerous gaps. Moreover the Appendix does not show the final five paragraphs of the source text, a total of 13 ranking clauses, which are not translated at all. Moreover, even where clauses are translated, they are presented in a totally different order in the translation. The French translation has seven numbered paragraphs. Table 5 shows the clauses of the source text which correspond to each of the paragraphs of the translation.

Thus paragraph 1 of the translation corresponds to clauses 2a and 2b of the source text. Paragraph 2 corresponds to clauses 7d, 7e and 7f; paragraph 3 to clause 5a, and so on. It is almost as if the translator had read the source text, but then put it aside and written his translation from memory. Moreover, this does not take into account many minor changes of ordering within the paragraphs, nor the fact that some clause complexes are broken down into several ranking clauses.

There are a few differences in thematic structure. There are two cases where an adjunct theme becomes a subject theme in the translation (4a, 5a), and three cases where the reverse happens, that is a subject theme becomes an adjunct theme in the translation (6i, 7f, 8d), as in 7f;

These waters do harden and petrify about the brims of the *Thermæ*.

Sur le bord du bain on voit que l'eau se durcit & se petrifie.

And there are numerous additional themes in the French translation where a single clause complex has been split up into separate ranking clauses.

In terms of the finite verbs and their process types, there are relatively few direct changes: one case of a prepositional phrase translated by a finite verb (4a).

As to the Frost, it penetrates at most four foot into the Earth.

Le froid y **est** si grand que la gelée penetre plus de quatre piez avant dans la terre.

And one case of a non-finite verb becoming finite (5a).

Of Meteors I have observed the *Ignis lambens*, the *Draco volans*, and frequently two *Mock-suns*, with three Rainbows **passing** through them and the True Sun.

Les Meteores y sont assez ordinaires; les feux folets y sont les plus frequens. On y voit souvent deux Soleils avec trois Arc en Ciel qui **passent** entre les deux images du Soleil, & le Soleil veritable.

In addition there are seven finite clauses in the translation which have no equivalent in the source text, and this, again despite the translation being much shorter than the source text. This is the case of the second clause of the translation of 8d, which is perhaps an attempt to render the word *ignivomous* of the original.

There are other ignivomous Mountains beside *Hecla*; yet all cover'd with Snow.

... elles sont toujours couvertes de neige. Outre le Mont Hecla il y en a plusieurs autres qui jettent, & vomissent le feu.

Table 6
Process types in Iceland text.

	PT		JdS	
Mat	28	47%	16	53%
Ment	4	7%	2	7%
Rel	23	38%	10	33%
Verb	3	5%	–	–
Exist	2	3%	2	7%
Tot	60		30	

Table 7
Process types for all Eng–Fr translations.

	PT		JdS	
Mat	87	43%	58	50%
Ment	24	12%	7	6%
Rel	64	32%	32	28%
Verb	19	9%	12	10%
Exist	8	4%	6	5%
Tot	202		115	

Table 6 gives the distribution of process types in the Iceland text and its translation.

There is a vast reduction in the number of finite verbs from 60 (73, if one includes the 13 final clauses that were not translated and not included in the analysis) to 30. Percentage-wise, there is an increase in the use of material process at the expense of relational.

Hence the translation here has many gaps, alters the ordering of the original, and has some differences in thematic structure and process types.

Table 7 shows the distribution of process types for the three texts combined.

The overall result shows a large decrease in the number of finite verbs, and in percentage terms an increase in the use of material process corresponding to a decrease in the use of mental and relational process.

There are a number of changes in thematic structure and those that tend to reoccur are the replacement of first person pronoun themes by third person pronouns, the splitting of long clauses in the source text into several clauses, giving additional themes, and the replacement of subject themes by adjunct themes.

10. Tentative conclusion

It would seem that the strategies adopted for the first translations in 1665/1666 were still being applied in 1675. Basically, the English translations follow the French originals closely, translate the whole text, and there are relatively few differences in thematic structure and process types. The French translations, on the other hand, have numerous gaps, in some cases alter the ordering, and display a certain number of differences in thematic structure and process types. One can only speculate as to why this should be the case, but it is possible that differences in the types of readers these two journals were catering for have a part to play. It must be remembered that while the *Philosophical Transactions* was restricted to questions of science and technology, the *Journal des Sçavans* covered all disciplines. This results from the fact that Henry Oldenburg created his journal with a specific readership in mind: the members of the Royal Society and like-minded people, whereas the *Journal des Sçavans* was part of Colbert's attempt to control new knowledge; it thus had a wider range and was aimed at all intellectuals. Thus while both journals had readers interested in scientific questions, the *Journal des Sçavans* had, in addition, readers interested in subjects in the humanities, such as history, law, and theology (Banks, 2012, 2017a). While it is true that intellectuals of the time frequently had wide-ranging interests and were not specialized in the contemporary sense, it would seem that, although the readerships of the journals overlapped, that of the *Journal des Sçavans* was wider than that of the *Philosophical Transactions*. Hence the strategies adopted by the French translator can be seen as an attempt to adapt the text for a different type of readership. In Banks (2019b), I describe this adaptation as protocalization.

Declaration of Competing Interest

The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Eclipse text

28 January 1675	25 March 1675
<i>OBSERVATION D'VNE ECLIPSE DE LVNE</i>	<i>A more particular Account of the last Eclipse of the Moon, as it was observed by the Parisian Astronomers, and promised by us in our former Numb. III. English'd out of the French Journal des Scavants.</i>
1a. LE II. Jour de lanvier 1675, environ à 5. heures 12. m. du soir, à l'Observatoire Royal, Messieurs Cassini, Picard, & Roemer commencerent à s'apercevoir que la partie Orientale de la Lune perdoit peu à peu sa clarté, de manière qu'à 5. h. 25. m. ils y remarquerent une Penombre manifeste, puis à 5. h. 32 m. 50. s. le bord vis-à-vis la tache nommée <i>Hevelius</i> devint si obscure, qu'ils furent tous d'accord que c'estoit le vray commencement de l'Eclipse.	JANuary II. 1675. about five a clock 12 <i>min.</i> in the Evening, in the Royal Observatory, M. <i>Cassini</i> , M. <i>Picard</i> , and M. <i>Roemer</i> , began to perceive, that the Oriental part of the Moon, by little and little lost its light; so that at 5 <i>h.</i> 25'. they saw a manifest penumbra; then at 5 <i>h.</i> 32'. 50". the limb over against the Spot called <i>Hevelius</i> grew so dark, that they all agreed, that this was the true beginning of the Eclipse.
1b. L'on voyoit encore la petite tache Riccioli, qui ne disparut que 15. s. apres,	They saw yet the little Spot <i>Riscioli</i> , which disappeared not till 15'. after;
1c. & en suite l'ombre alla s'avaçant de tache en tache jusqu'à l'autre bord de la Lune, suivant l'ordre que l'on verra cy-apres dans le detail.	and so the Shadow advanced from spot to spot unto the other opposite limb of the Moon, according to the order below particulariz'd.
2a. Avant que la Lune fust presque entierement plongée dans l'ombre de la terre, il ne paroissoit aucune lumiere sensible dans sa partie eclipsée; tant à cause de la clarté de l'autre partie qui restoit à eclipser, que d'un leger brouillard où la Lune se trouvoit alors.	Before the Moon was almost altogether immersed into the Shadow of the Earth, there appear'd not any sensible Light in the part Eclipsed, as well by reason of the brightness of the other part yet remaining to be darkened, as of some little Mist then being about the Moon.
2b. Mais apres que le brouillard fut dissipé; la Lune entierement eclipsée parut de couleur rouge brune.	But that Mist being dispelled, the Moon totally Eclipsed looked of a colour red-brown.
2c. La partie orientale qui avoit esté obscurcie la premiere, parut au commencement plus sombre que l'autre;	The Eastern part, which was obscured first, appeared at first more dusky than the other,
2d. & sa noirceur s'augmenta à mesure que la Lune entra plus avant dans l'ombre de la terre;	and its blacknes, increased according as the Moon entred more and more into the shadow of the Earth;
2e. mais quelque temps apres cette mesme noirceur passa de l'autre costé de la Lune; de sorte que la partie Occidentale devint à son tour, d'vn rouge plus brun & plus obscur que l'autre.	but a while after, the same blackness passed to the other side of the Moon, so that the Western part became in its turn to be of a redish colour, browner and darker than the other.
3a. A 8. h. 7. le bord qui est aux environs de la tache <i>Grimaldi</i> , & qui estoit alors le plus proche de l'horizon, commença à s'éclaircir: ce qui fit croire à l'un des Observateurs que c'estoit le commencement de l'Emersion & que la Lune sortoit de l'ombre;	At 8 <i>h.</i> 7'. the Limb that is about the spot <i>Grimaldi</i> , and which was then next the Horizon, began to clear up: Which made one of the Observers believe, that it was the beginning of the Emersion.
3b. mais comme la blancheur de ce bord n'estoit pas encore assez grande, les deux autres Observateurs jugerent ce retour un peu plus tard, l'un à 8. h 8. m. & l'autre 8. h. 9. m. 30.	But, the whiteness of this limb not being then yet great enough, the two other Observers judged this return of Clearness a little later, the one at 8 <i>h.</i> 8'. and the other at 8 <i>h.</i> 9'. 30".

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| <p>3c. Ayant néanmoins en suite égard au temps de la découverte des premières taches qui vinrent après, ils estimèrent tous que la première Émersion s'étoit faite à 8 h. 8 m.</p> <p>4. Cela fait voir ce qu'on doit attendre des Éclipses de Lune pour la détermination des longitudes, lors que les observateurs se contentent de marquer simplement le commencement & la fin de l'Éclipse.</p> <p>5a. Pendant le plus grand obscurcissement sçavoir à 7 h. 21 m. le bord meridional de la Lune estoit venu tres-proche d'une petite Étoile du nombre de celles qu'on ne peut voir sans lunette d'approche, laquelle fust comparée à la Lune, en prenant ses distances de la Lune & de l'ombre avant la totale Immersion, & depuis jusques à la première Émersion dans le dessein de trouver par son moyen la parallaxe de la Lune.</p> <p>5b. Peu après le commencement de l'Émersion, sçavoir à 8 h. 9 m. 20 s. une autre Étoile, encore plus petite que la première, sortit par le côté le plus obscur, environ vis-à-vis la tache <i>Langrenus</i>; lequel endroit on ne jugea qu'à peu-près, parce qu'alors on ne pouvoit rien discerner dans cette partie là, quoy que l'on vist assez bien tout le contour de la Lune</p> <p>6a. Enfin à 9 h. 9 m. 40 s. les trois Observateurs convinrent que la Lune sortoit de l'ombre,</p> <p>6b. mais il resta une Pénombre qui dura encore quelque temps.</p> <p>7a. Le diamètre de la Lune mesuré avant l'Éclipse estoit de 32 m. 15 s.</p> <p>7b. Il est vray que lors qu'elle estoit entièrement éclipcée on la trouva plus petite de quelques secondes qu'avant l'Éclipse:</p> <p>7c. mais comme il est difficile de la mesurer dans cette état, il y a lieu de douter de cette Observation.</p> <p>8. Les temps furent marquez sur de grandes horloges à Pendule, qui avoient esté ajustées au Soleil le mesme jour & qui furent en suite vérifiées le lendemain: Outre qu'avant l'Éclipse à 4 h. 45 m. 1 s. des horloges, l'Étoile <i>Capella</i> estoit haute de 45. degrés vers l'Orient.</p> | <p>Yet having in the sequel, a regard to the time of the discovery of the first Spots that came after, they all esteemed the first Émersion to have been at 8 h. 8'.</p> <p>And this shews what is to be expected from the Eclipse of the Moon for the determination of the Longitudes, when Observers do content themselves barely to remark the beginning and the end of the Eclipse.</p> <p>During the greatest Obscuration, viz. at 7 h. 21'. the Southern Limb of the Moon was come close to a small Star, of the number of those that cannot be seen without a Telescope; which was compar'd with the Moon by taking its distances from the Moon and the Shadow before the total Immersion, and afterward until the first Immersion; with a design, by means thereof to find the <i>Parallax</i> of the Moon.</p> <p>A little after the beginning of the Émersion, viz at 8 h.9'.20", another Star, yet less than the former, came out at the darkest side, almost over against the spot <i>Lamprenus</i>, which place was taken but to be near so, because then they could discern nothing in that part, though they saw well enough the whole contour or compass of the Moon.</p> <p>Lastly, at 9 h.9'.40". all the three Observers agreed, that the Moon then came out of the Shadow; but there remained a <i>Penumbra</i>, which lasted for sometime after.</p> <p>The <i>Diameter</i> of the Moon, being measured before the Eclipse, was of 32'. 15".</p> <p>'Tis true, that when she was wholly Eclipsed, she was found less by some Seconds than before the Eclipse:</p> <p>But since 'tis difficult to measure her in that State, there is reason to doubt of this Observation.</p> <p>The <i>Times</i> were noted by great Pendulum-Watches, that had been adjusted by the Sun the same day, and that were afterwards verified the next day: Besides, that before the Eclipse at 4 h. 45'. 1". by the Watches, the Star <i>Capella</i> was 45 degrees high towards the East.</p> |
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Appendix B. Huygens text

15 February 1675	24 March 1675
<p><i>EXTRAIT D'UNE LETTRE DE M^R. HUYGENS à l'Auteur du Journal, touchant une nouvelle invention d'horloges tres-justes & portatives.</i></p> <p>1a. Ayant trouvé une invention long-temps souhaitée; par laquelle les horloges sont rendues tres justes ensemble & portatives; je crois que ce sera faire chose agreable au public de luy en faire part..</p>	<p><i>An Extract of the French Journal des Scavans, concerning a New Invention of Monsieur Christian Huygens de Zullichem, of very exact and portative Watches.</i></p>

- 1b. C'est pourquoy je vous envoye la description & la figure du modele, qui contient ce qu'il y a de particulier dans cette invention; afin que parmy d'autres nouveautez en matiere de sciences, vous puissiez, s'il vous plaist, les inserer dans votre Journal
2. Les Horloges de cette façon estant construites en petit seront des montres de poche tres-justes, & en plus grande forme pourront servir utilement par tout ailleurs, particulierement à trouver les longitudes tant sur mer que sur terre, puisque leur mouvement est réglé par un principe d'égalité, de mesme qu'est celuy des pendules corrigées par la Cycloïde, & que nulle sorte de voiture ne peut faire arrester.
- 3a. Le secret de l'invention consiste en un resort tourné en spirale, attaché par son extremité interieure à l'arbre d'un balancier equilibre, qui tourne sur ses pivots: & par son autre extremité à une piece qui tient à la platine de l'horloge.
- 3b. Lequel ressort, lors qu'on met une fois le balancier en branle, serre & deserre alternativement ses spires, & conserve avec le peu d'aide qui lui vient par les roües de l'horloge, le mouvement du balancier, en sorte que quoy qu'il fasse plus ou moins de tour, le temps de ses reciprocations sont toujours égaux les une aux autres.
- 4a. Dans la figure la plaque du dessus de l'horloge est A B. le balancier circulaire C D. dont l'axe ou arbre est E F. Le ressort tourné en spirale G H M, attaché à l'arbre du balancier en M, & à la piece qui tient à la plaque de l'horloge, en G toutes des spires su ressort se tenant en l'air sans toucher à rien.
- 4b. N O P Q est le cocq dans lequel tourne l'un des pivots du balancier.
- 4c. RS est une des roües dentées de l'horloge, ayant un mouvement de balancement que luy donne la roüe de rencontre.
- 4d. Et cette roüe R S engraine dans le pignon T, qui tient à l'arbre du balancier, duquel par ce moyen le mouvement est entretenu autant qu'il est necessaire.
- The Watches of this Invention being made in small, shall serve for very exact Pocket-watches, and when made greater shall be useful every where else, and particularly to find the Longitudes both by Sea and Land, forasmuch as their movement is regulated by a principle of equality, as that of Pendulum's is Cycloid, and that no kind of carriage shall be able to stop them.
- The secret of the Invention consists as a Spiral Spring, fastned by its innermost end to the Axis or Arbre of a poised Balance (bigger and heavier than is usual) which turns upon its pivots; and by its other end to a piece that is fast to the watchplate.
- Which spring, when the Ballance-wheel is once set a going, alternately shuts and opens its spires, and with the small help it hath from the watch-wheels, keeps up the motion of the Ballance-wheel, so as that, though it turn more or less, the times of its reciprocations are always equal to one another.
- In Fig. 4. Tab. I. the upper plate of the Watch is A B: The Circular Ballance-wheel, C D, of which the Arbre is E F: The Spring turned spirally, G H M, fastned top the Arbre of the Balance-wheel in M, and to the piece that is fast to the Watch-plate, in, G; all the spires or winding of the Spring being free without touching any thing.
- N O P Q is the Cock, in which one of the pivots of the Ballance-wheel turns;
- R S is one of the indented Wheels of the Watch, having a ballancing motion, which the Balance-Wheel of rencontre gives to it.
- And this Wheel R S catches in the pinion T, which holds on the Arbre of the Ballance, of which by this means the motion is entertained as much as is necessary.

Appendix C. Fish text

21 June 1675

A Letter written to the Publisher by the Learned Mr. Ray, containing some Considerations on the Conjecture in Numb. 114. of these Tracts, about the swimming Bladders in Fishes.

The Letter is not mentioned in the contents, because it was thought at the time when the first sheet was a printing, the Discourse about the precedent Instrument would have taken up all the room of this Tract.
SIR,

26 August 1675

EXTRAIT DV IOVNAL D'ANGLETERRE contenant une lettre de M. Ray à M. Oldenbourg touchant les vessies pleines d'air qui se trouvent dans plusieurs poissons.

- 1a. I was much pleased and satisfied with the ingenious conjecture I found in your *Transactions of May* last, pag. 310. concerning the swimming Bladders of Fishes; and perswade my self that the Author thereof hath hit upon the true use, viz. to sustain or keep them up in any depth of water.
- 1b. For 1. it hath been observed by some, and I find it in Mr. *Willughbyes* general notes of Fishes, that if the swimming bladder of any Fish be pricked or broken, such a Fish sinks presently to the bottom, and can neither support nor raise up it self in the water.
- 1c. 2. Flat Fishes, as *Soles, Plaice, &c.* which lie always groveling at the bottom, have no swimming bladders that I could ever find.
- 1d. 3. In most Fishes there is a manifest channel leading from the gullet or upper orifice of the stomach to the said bladder, which without doubt serves for conveying air thereinto, as may easily be tried by any one that pleases.
- 1e. But though air may be received into the bladder, yet is there a valve or some other contrivance to hinder the egress of it; for you shall sooner break the bladder than force any air out by this channel.
- 1f. Yet in *Sturgeons* Mr. *Willughby* hath observed, that pressing the bladder, the stomach presently swelled: So that it seems in that Fish the air passes freely both ways.
- 1g. Possibly, the Fish while alive may have an ability to raise up this valve, and let out air upon occasion, which yet I doubt of, because other Animals have no such faculty of opening any valves made to stop the reflux of fluids.
- 1h. But I verily think, there is in the coat of this bladder a muscular power to contract it when the Fish lifts: For, in many Fishes it is very thick and opaque, like the coat of an Artery (which hath, as Dr. *Willis* observes, such a muscular faculty) as for example in all the Cod kind; in some, v.g. the *Hake*, called in Latin *Merlucius*, it is inwardly covered with a red carneous substance, which I take to be muscularous flesh; in others, it is forked at the top, and to each horn hath a muscle affixed
- 1j. Now the muscularous force need not be great, being still assisted by the water as the Fish descends; the pressure of the water being much greater at the bottom than at the top, as appears by the ascending bubble.
- 1k. But whereas it is said, Perhaps the Fish can by its sides of some other defence keep off the pressure of the water, and give the air leave to dilate it self: It may be objected, if it can do so, what needs than any air bladder? The cavity of the abdomen may serve the turn.
- IL a esté parlé autrefois dans le Journal des vessies pleines d'air qui se trouvent dans plusieurs poissons, dont l'usage est de tenir ces poissons plus ou moins plongez dans l'eau que ces vessies sont plus ou moins resserrées.
- Car le poids de l'eau les comprime quand les positions sont au fond de l'eau,
& quand ils viennent vers la surface, ces vessies se dilatent, comme nous voyons que les petites bouteilles pleines d'air qui sortent du fond de l'eau s'élargissent à mesure qu'elles approchent plus de la surface.
- M. Ray confirme ces conjectures 1. Par les remarques que M. Willughbyes a faites; qu'ayant piqué ou rompu ces vessies dans les poissons ils demeurent toujours au fond de l'eau.
2. Que les poissons plats qui n'ont point ces sortes des vessies ou vesicules, ne sortent jamais du fond de l'eau.
3. Que dans plusieurs poissons il y a un canal qui va de ces vessies dans l'orifice superieur de l'estomach, & qui sert sans doute à apporter de l'air dans ces vessies, mais que quelque valvule, ou quelque autre artifice de la nature empêche d'en sortir.
- Car on les rompt plustost que de faire rentrer l'air par ce canal.
- M. Willughbyes a neanmoins observe que dans l'Esturgeon l'estomach s'enflait en pressant ces vessies.
- Il semble qu'elles se peuvent resserrer comme des muscles, car leur membrane est fort épaisse en plusieurs poissons: & il semble qu'au-dedans elle est souvent revestue d'une substance rouge & musculieuse.
- La force naturelle de ce muscle est beaucoup aide par le poids de l'eau quand le poisson descend au fond.

11. To which I answer, that this power of dilating the *abdomen* by the muscles may assist Fishes to rise, whose natural place is toward the bottom; and the Air compressed in the bladder dilating it self as the Fish ascends, facilitates the action of the muscles.
- 1m. But those Fishes that descend by contracting the bladder, letting the contracting muscle cease to act, will rise again of their own accord, the Air within dilating it self, as we see in glass bubbles by compression of the air in them descending, which as soon as the force is removed ascend without more ado.
- 1n. Besides the flat Fishes I before mentioned, all the cartilaginous kind, as well flat as long, want swimming bladders:
- 1o. What course they use to ascend and descend in the water, I know not.
- 1p. Many of the Eel-kind (not all) have swimming bladders; yet can they hardly raise themselves in the water, by reason of the length and weight of their tails:
- 1q. I suppose, the Air-bladder being near their heads helps them to lift up their head and fore-part.
- 1r. Great diversity there is of swimming bladders in respect of figure, substance, situation and connexion in several Fishes:
- 1s. But not being able to give you any reasonable account of each, I shall forebear to add any thing further of them.
- 1t. SIR,
Your very humble Servant
John Ray.
- Quand cet air se dilate les poisons montent en haut, & l'air peut faciliter l'action des muscles.
- Des que la contraction du muscle cesse l'air se dilate de luy-mesme, comme nous voyons dans ces petites bouteilles de verre qui descendent au fond de l'eau quand l'air qu'elles enferment est pressé, & qui remontent aussi-tost que cet air cesse d'estre comprimé.

Appendix D. Lakes text

24 May 1675	1 July 1675
<i>Extracts of several Letters sent to the Publisher from Edinburg, by the Learn'd Mr. James Gregory, to whom they were written by that intelligent Knight Sir George Makenzy from Tarbut.</i>	<i>EXTRAIT DV IOVRNAL D'ANGLETERRE, contenant quelques remarques faites & communiquées par Mr. Gregoire, touchant quelques Lacs & quelques Rivieres.</i>
1a. 1. THE wind here, on the 21 th of Decemb. last, was extraordinary	
1b. it broke a Standard stone, that stood as an Obelisk near an old Church; which stone was about 12 foot high, 5 foot broad, and near a foot thick.	
1c. Whole woods were over-turn'd, and torn up from the root, though in a low situation.	
1d. It blew from the North-west,	
1e. and of a long time the wind had continued Westerly. Jan. 16. 167 ⁴ / ₅	
2a. 2. I had notice of a <i>Phænomenon</i> , that I judged odd and considerable in searching into the nature of <i>Cold</i> , which is; That there is a little Lake in <i>Straherrick</i> on the Lord <i>Lovels</i> Lands, which never freezes all over (even in the most vehement frosts,) before February;	PRemierement il parle d'un petit Lac qui est dans un lieu nommé Straerssch, qui quelque grand froid qu'il fasse avant le mois de Fevrier ne se glace jamais;
2b. but one nights frost there-after will freeze it all over,	mais dés le mois de Fevrier il se glace tout entier dans l'espace d'une nuit,

- 2c and two nights then will make the ice of a very considerable thickness. & dans les deux ou trois nuits d'après la glace devient fort profonde,
- 2d. This I did inquire after very solicitously from the honestest and soberest of the adjoining Inhabitants, and it was verified by so many, that there was left no place to doubt the truth of the matter of fact. & il dit avoir appris par plusieurs personnes dignes de foy que la même chose arrive dans deux autres Lacs.
- 2e I have since heard of two other Lakes, one of which is on Lands belonging to my self, called *Loch Monar*, of a pretty largeness, which steddily keeps the same method,
- 2f. and I have inquired after it by many, who have affirm'd it to me on their own knowledge. 2. Dans un lieu nommé Straglash il y a un autre lac qui a quelque chose qui n'est pas moins surprenante.
- 2g. There is another little Lake in *Straglash* at *Glencanich* on Lands belonging to one *Chissolm*; C'est que quoy qu'il soit dans un lieu assez élevé, entre deux montagnes plus élevées encore, il est toujours glacé vers le milieu, même dans les plus grandes chaleurs de l'Esté, quoy que les rayons du Soleil se réfléchissent fortement de ces deux montagnes.
- 2i. the Lake lies in a bottom 'twixt the tops of a very high hill, so that the bottom it self is very high. Et ce qui est encore remarquable & que Mr. Gregoire a voulu voir luy-même, c'est que la même chose n'arrive pas a plusieurs autres lacs qui sont dans la voisinage & qui se trouvent dans des lieux aussi élevez. L'herbe même est toujours verte proche des bords de ce Lac, comme dans un continuel Printemps.
- 2j. This Lake never wants Ice on it in the middle, even in the hottest Summer, though it thaws near the edges: Et ce qui est encore remarquable & que Mr. Gregoire a voulu voir luy-même, c'est que la même chose n'arrive pas a plusieurs autres lacs qui sont dans la voisinage & qui se trouvent dans des lieux aussi élevez. L'herbe même est toujours verte proche des bords de ce Lac, comme dans un continuel Printemps.
- 2k. And this Ice is found on it, though the sun by reason of the reflexion from the hills in that Country is very hot, and Lakes lying as high in the neighbourhood have no such phœnomenon.
- 2l. 'Tis observable also, that about the borders of this Lake the Grass keeps a continual verdure, as if it were in a constant Spring, and feeds and fattens beasts more in a week, then any other Grass doth in a fortnight.
- 2m. The matter of fact I have fully examined in both these; but to hit the cause, requires a better Philosopher then I am, &c. *Februar*. 8. 167⁴/₅.
- 3a. 3. Our famous Lake *Ness* never freezes; 3. Il dit au contraire que le fameux lac de Nesse ne se gele jamais, qu'il en sort dans les plus grands froids comme des broüllards & des nouées for-épaisses;
- 3b. but on the contrary in the violentest frosts the greater clouds of steams do arise from it. & qu'un jour d'esté se promenant le matin le long de la riviere de Nesse, un grand broüllard s'éleva qui luy blanchit les cheveux,
- 3c. And I remember, that at two several times, I being at *Inverness*, walking in the evenings along the bridge over the River *Ness*, a mist of those steams coming from the Lake and falling down to us over the river (for there was no mist in any place thereabout but on this Lake and River only,) our haire became all white, like the whiteness of a hoare-frost, & il remarqua que ce qui tomboit estoit chaud & d'une substance molle.
- 3d. but it was soft and warm;
- 3e. and this was in the midst of Summer and in warm evenings.
- 3f. Last week I was speaking with Dr. *George Makenzy* (who lives at *Inverness*) of this matter: Il ajoûte que Mr. Makenzy qui demeure près de ce lieu là, l'avoit assure que le Rosmarin étoit toujours verd le long de ce Lac, même dans les plus grands hivers.

- 3g He told me, that he observes *Rosemary* to continue in the gardens about that Lakes side, notwithstanding the last Winters long and violent frosts; whereas a far less violent Winter ordinarily kills all the *Rosemary* which is in gardens that lye in warmer places and at the Sea-side:
- 3h And, which is more, though I live near it, and in better soyle and warmer situation; yet any Winter, more than ordinary cold, kills my *Rosemary*, though cover'd over with straw and litter; Whereas near *Logh Ness* it remained good; though uncover'd, in the last sharp Winter; which he attributes (and I think on good ground) to the warmth occasioned by those steams that frequently arise from that Lake. *Febr.* 25. 167⁴/₅.
- 4a. 4. Having in my former Letters written of water, I shall yet add this of that subject; That in *Glevelg* at a place called *Achignigliun* there is a little Rivulet, which so turns *Holly* into a greenish stone, that they ordinarily make moulds of it for casting of balls for fusees;
- 4b and Tinkers that work in brass make both their moulds and melting pots of it; and women their round wharls for spinning.
- 4c. May it not be, that by the long infusion in water, descending from hills, which perhaps abound in marle capable to be resolved into small particles by the constant washing of the water, may it not be, I say, that these litle particles do intrude into the cleansed pores of the *Holly*, and so make up that soft stone?
- 4d. And any thing ligneous remaining of the very hard timber, being all incrustated with this marble, may it not thereby be guarded from the action of the fire? *April* 16. 1675.
4. Enfin il assure que dans un lieu nommé *Glovolg* il y a une petite Riviere qui change le hous, que les Anglois appellent *holly*, en une pierre verte dont les chaudronniers se servent pour faire leurs moules.
- Il est mal-aisé de rendre raison de ce changement; car on ne peut pas dire comme quelques-une l'ont cru, que cette eau descend des montagnes chargée de petites parties de marbre qu'elle a dissoutes; parce qu'il n'est pas possible que ces parties en s'insinuant dans les pores du bois, puissent faire une pierre si molle, & le changer si bien qu'il n'y demeure rien qui approche de la nature du bois que le feu puisse consumer?

Appendix E. Iceland text

	22 February 1675	6 May 1675
	<i>An Accompt of D. Paulus Bioronius, residing in Iceland, given to some Philosophical Inquiries concerning that Country, formerly recommended to him from hence: The Narrative being in Latin, 'tis thus English'd by the Publisher.</i>	<i>EXTRAIT DV JOURNAL D'ANGLETERRE contenant un extrait d'un memoire de Paulus Bioronus qui est en Islande, où il répond à quelques questions qu'on luy avoit faites touchant cette Isle.</i>
1a.	THE Captain of the English Ship being ready to set sail, I cannot now answer your <i>Queries</i> so fully as I intended; but purpose to do it hereafter, when I shall write the natural History of this Island.	
1b.	Mean time be pleased to accept of the short notes following.	
2a.	Our <i>Air</i> is very healthy all the year long.	I. L'Air y est assez sain toute l'année, ainsi les maladies y sont peu frequentes:

- 2b. The Diseases, which the Inhabitants are most subject to, are the Colick and Leprosy. (1i) les plus communes sont la colique & la lepre.
- 2c. We have no Physicians; only two or three Chirurgions, that furnish us with some Plaisters for the dressing of wounds.
- 2d. In our Air, Iron rusts very soon.
- 3a. The Changes of the *Weather* are uncertain,
3b. nor do they fall out according to the four Seasons of the Year.
- 3c. Sometimes it snows as well as hailes in the midst of Summer;
3d. and the wind, blow now and then most furiously at the same season.
- 4a. As to the *Frost*, it penetrates at most four foot into the Earth. (4i) Le froid y est si grand que la gelée penetre plus de quatre piez avant dans la terre.
- 4b. Spirit of Wine and Oyl is free from being frozen, much more Quicksilver.
- 4c. We preserve our Fish from putrefaction by burying them in the Snow. 4 On y conserve le poisson en l'ensevelissant dans la neige, comme on le conserve ailleurs avec le sel.
- 4d. Bodies frozen do swell, and are changed in taste and colour.
- 4e. The figure of the Snow is various,
4f. and so is it's size.
- 4g. Haile is roundish;
4h. the greatest is only of the bigness of Haile shot, that we kill fowl with.
- 5a. Of Meteors I have observed the *Ignis lambens*, the *Draco volans*, and frequently two *Mock-suns*, with three Rainbows passing through them and the True Sun. 3. Les Meteores y sont assez ordinaires;

(3i) les feux folets y sont les plus frequens.
(3ii) On y voit souvent deux Soleils avec trois Arc en Ciel qui passent entre les deux images du Soleil, & le Soleil veritable.
- 5b. We have no stated winds.
- 6a. The Depth of our *Sea* varieth, the greatest about our Coast is four-score fathoms.
- 6b. How much Salt our Sea-water yields, I know not.
- 6c. The generality of our people use no salt;
6d. those that do make use of what is imported.
- 6e. Our Sea-water in clear nights being struck with Oares, shineth like fire bursting out of a furnace. 7. Il paroît meme jusques dans la mer.

(7i) L'eau en ayant esté agitée par les rames paroît durant la nuit quand le temps est serein comme un feu qui sort d'un founaille.
- 6f. The *Tydes* observe the motion of the Moon.
- 6g. The Sea swells about the Moons rising and setting;
6h. and it falls when she is Southerly and Northerly.
- 6i. The ordinary highest Tydes are not above sixteen foot, except in Autumn, when 'tis very tempestuous. (5ii) & dans le reste de l'année les plus hautes ne s'élevent d'ordinaire que de seize piers.
- 6j. and then they rise sometimes to twenty foot.
- 6k. About the Full and New Moon are the highest Spring-Tides and the lowest Neap tides. (5i) En Automne elles vont jusqu'à 20. piers,

7a.	As for the <i>Lakes</i> and <i>Springs</i> ; of the former we have very many,	
7b.	and most of them on high Mountains, which are stored and Salmons.	
7c.	Of the latter we have innumerable, gushing out of Rocks.	
7d.	We abound also with <i>Hot Springs</i> , of which some are so hot, that in a quarter of an hour they will sufficiently boyl great pieces of Beef; which is thus order'd:	2. Il y a plusieurs sources d'eaux chaudes, où les habitans du pais font cuire commodement leur viande. (2ii) Le bœuf y est cuit en moins d'un quart d'heure.
7e.	They hang Kettles with cold water over them, in which they put the meat to be boyled; for fear of either burning or throwing up the meat by the fervent and vehement ebullition of the hot waters.	(2i) Ils la mettent dans un pot rempli d'eau froide qu'ils font tremper dans l'eau chaude.
7f.	These waters do harden and petrify about the brims of the <i>Thermæ</i> .	(2iii) Sur le bord du bain on voit que l'eau se durcit & se petrifie.
8a.	Our highest Hills are not above a quarter of a German mile high; which how I have measur'd, I shall give an account hereafter.	6. Les plus hautes montagnes n'ont pas plus d'un quart de lieuë d'Allemagne de hauteur;
8b.	There is a whole ridge of Mountains thorough all the Iland.	
8c.	Our people live only in the Valleys, and towards the Sea-shore.	
8d.	There are other ignivomous Mountains beside <i>Hecla</i> ; yet all cover'd with Snow.	(6ii) Outre le Mont Hecla il y en a plusieurs autres qui jettent, & vomissent le feu. (6i) elles sont toujours couvertes de neige.

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