

海外からの植物移送・保存技術に関わる史料（翻刻）

— 大英帝国プラントハンターの元締めJ.バンクスによる手引き書 —

野 間 晴 雄

An Historical Document on “Rules for Collecting and Preserving Specimens of Plants” Written by Joseph Banks (1796)

— Plant Hunters’ Manual in British Empire in the End of 18th Century —

NOMA Haruo

This paper is aimed to transliterate the English manuscript “*Rules for Collecting and Preserving Specimens of Plants*” (1796) written by Joseph Banks (1743–1820), who is a renown English plant collector, and then became an influential patron for plant hunters, explorers or natural historians in the late 18th century to the early 19th century. Since the original document is preserved in the British Library, the author used the microfilm copy possessed in Kansai University library.

The background of this written document is how to transport live plants collected in Asia, Africa and New Continents for plant hunters to Western Europe with moderate and cool climate. The end of 18th century is the last phase of scientific navigation era for European countries. British Empire sent James Cook to the Pacific Ocean navigation in order to astronomical survey and make correct maps in 1768–1771. J. Banks took the same ship and collected many rare plants. After he came back to Britain, he, as the president of the Royal Society of London for the Promotion of Natural Knowledge, started to support financially to collect rare or economically useful plants in the world by plant hunters. At the same time, he instructed plant hunters or botanists to send rare plants, seeds, and herbarium to Kew Garden in the suburbs of London. Thus, the Kew Garden has become the world center of plants.

Since the transport live plants to Britain by ship safely is a very difficult work

at that time, so Banks instructed minutely in the document such as the protection them from sea water, uncertain temperature and humidity.

ヨーロッパのいわゆる「大航海時代」によってあらかた世界の状況がわかってきたなか、18世紀の半ばにイギリスは最後の大規模な科学的探検を伴う航海を行った。それがジェームズ・クック（1768-71）による太平洋航海で、正確な位置の計測（火星）などを含んでいた。この探査船エンデバー号に乗り込んだのがジョゼフ・バンクス（1743-1820）であった。

バンクスの父はイングランドに広大な土地を所有した大貴族であった。父は18歳の時に早世したため、1764年21歳の若さでバンクスはその地所を相続した。この資産によって、終生、バンクスは金には困ることはなく、英国における科学研究の組織者・パトロンとして、膨大な物心両面にわたる援助を自然科学の多方面に行い、半ばカリスマ的な人物となっていく。とりわけ自然科学・博物学の学士院にあたる王立協会（The Royal Society of London for the Promotion of Natural Knowledge）の会員（フェロー）に弱冠35歳で選ばれた後、42年の長きにわたって会長として君臨して絶大な影響力をもった。

バンクスは少年期より植物採集など野外で活動することに熱中し、パブリックスクールをハロー（Harrow）とイートン（Eton）で過ごし、オックスフォード大学で3年のあいだ植物学を学ぶ。しかし師には恵まれずに、ケンブリッジ大学に移り、そこで植物学と天文学を学ぶ。この大学の講座を開くのにも基金を寄付している。1766年にはニューファンドランドやラブラドルなど北アメリカ北岸を航海し植物採集を行う。その2年後に上に言及したクックの世界一周探検船に乗り込んだ。予算が不足する探検に私費を投じて援助もしている。この探検には、スウェーデンの植物学者ダニエル・ソランダー（D. C. Solander : 1733-1782）と植物画家パーキンソン（1745-1771）を同行している。オーストラリア東岸、ニュー・ホランド（新オランダ）と呼ばれていた地域で植物採集をして、3000点もの植物乾燥標本を持ち帰っている。シドニーをのぞむ湾をボタニー湾と名付けたのもバンクスである。

バンクスはオーストラリアの植物を初めて網羅的に紹介して名声を博すが、イギリスのオーストラリア領有の先兵でもあったことは紛れもない事実である。帰国後は1772年にアイスランド探検を企てるが、その後はもっぱら王立協会と、ロンドン郊外のキュー植物園（Kew Garden）を根拠に、植物採集探検家であるプラントハンターや園芸会社、学者を東ねていく。世界の植物がキュー植物園に集まるように、幅広い人的ネットワークを構築していった。フランシス・マッソン（1741-1805）の南アフリカ・北アメリカ、デヴィッド・ネルソン（?-

1789) の太平洋諸島, ジョージ・カレー (1770-1829) のオーストラリアでの植物採集が, バンクスが直接手塩にかけたプラントハンターたちの実績である。世界に広がっていった彼らは, イギリスにおけるグローバルかつ組織的な植物採集の先鋒となっていった。

それは大英帝国がアジア, アフリカ, 新大陸に植民地を築いていくことと不可分の関係ではあった。そのため, キュー植物園は現在でも世界でもっとも大きな乾燥標本や植物関係の書籍・往復文書などを蓄積している一大コレクションである。

キュー植物園は今年 (2009) に設立250周年を迎える。ロンドンの南西郊外20km, テムズ (Thames) 川右岸, S字状に蛇行する滑走斜面にあり, もとはキュー宮殿 (Kew Palace) の附属庭園から発達したもので, ジョージ2世の息子, ウェールズの皇太子フレデリック (Frederick) とサセゴータ (Saxe-Gotha) が1736年に結婚して住んだ地である。1752年, オーガスタは筆頭庭師のJohn Dillman (後の夫) に命じてButeを助手にしてOrngaryに隣接して9エーカーの庭を造作させた。オーガスタはまた, イギリス東インド会社社員として中国に滞在したことのあるチェンバース (William Chambers) を指示して東洋趣味が再現させた。イスラムの様式も庭園内に彼によって建築された。Bellona, Arethusa, Aeolusなどのドームをいだいた様式が園内の丘の上に築かれている。

そのあとを継いだ庭園設計者がケイパビリティ・ブラウンである。従来の装飾的な建築を廃して, 植物を中心とした改造を行った。その後, 大英帝国の拡大とともに, キュー植物園はカルカッタ, セイロン, 南アフリカ, シンガポールなど植民地の植物園の元締めとしての地位を築いていき, 膨大な資料と情報が蓄積されていった。

本稿で翻刻・紹介するのは, バンクスが1796年に世界各地に拡散しているプラントハンターや輸送業者などを対象に執筆した, 植物移送のための手引き書といえる性格の史料である。ペんで書かれた手稿である。その複製が「バンクス関係資料」として, 大英図書館から経済史関係マイクロフィルムになっている。本稿は, 関西大学図書館に所蔵されているそのコレクションから *Rules for Collecting and Preserving Specimens of Plants (1796)* を翻刻し, 簡単な注を施したものである。この資料の詳しい解説や考察は別稿を用意しているので, 今回は史料の忠実な翻刻にとどめたい。全体としてはきれいな書体で書かれ, ほぼ解読できたが, 一部には不明の箇所, 判読不能なものがある。今から200年以上前の英語であるので, 古い綴りや綴りミスも散見される。また, 文の途中でも大文字が使用されているが, 原文通りに翻刻した。明らかな綴りの誤りは文中に (sic.) として指摘しておいた。

海洋航海に頼っていた植物のイギリスへの移送は, 生きたまの植物苗・株と種子, 球根がある。しかし気候条件の悪い冷温帯に属するイギリスでは, 種子で移送することは発芽しない

おそれがあるので、プラントハンター達はできるだけ生きたままの植物を、船でいかに安全にかつ枯らさないように運ぶかに腐心した。1834年にはロンドンの開業医、ナサニエル・バクシヨール・ウォード（1791-1886）が木製の移送用の特別の箱、いわゆる「ウォードの箱」を考案して、飛躍的に移送の確実性が高まる。この史料の時点はまだそれが考案されていない時期であり、海を越えて生きた植物を運ぶことはきわめて困難なことであった。その当時の方法を、バンクスが事細かに指示していることが興味深い。



写真1 キュー植物園図書館（2009年1月撮影）



写真2 キュー植物園植物乾燥標本室（2009年1月撮影）

史料翻刻

Rules for Collecting and Preserving Specimens of Plants

Every kind of seed is well those which are Cultivated for men, is grasses, Mosses, Ferns, and Even Weeds, howsoever despicable they may Appear to a Common Observer will be acceptable to a Botanist, he is often able to Observe differances (sic.) which escape the Eyes of those who have never handed science, and of the plants sent should Each be such as he has before often met with he will be amply satisfied by his owing that they are natives of any Particular Country the produce of which he was before unacquainted with.

Seldom Botanists have made use of the flowers and fruits of plants, as the principal Instrument of distinguishing their numerous tribes when they have either one or the other of these, they Can guess, but when they have both they can determine with certainty, to what Class each plant belongs, and to which of those plants already Known it bears an affinity ; from those they are Enabled often to Discover vertues (sic. virtues), which those who have not studied that science Could never but by Accident have found out, hence the Cheif (sic. Chief) use of Botany, and from hence it plainly Appears, that the people of any Country where this science is not studied in its full extent may reap much Benefit, by Communicating their plants to Botanists of other Countrys (sic. Countries) who Amply repay the obligation by sending Back on account of those vertues (sic. Virture) and uses of Plants which they are Enabled to discover by such a Communication, but might otherwise have Remained forever in Obscurity.

Such Communications may be made either by sending the plants themselves growing in Earth, the seeds of them, or branches with fruits and flowers, gathered when in perfection and dried in such a manner as to be preserved from Corruption : this last alone is sufficient to Distinguish and Ascertain their species; the others are only to be used in cases where either the singularity Beauty, or Usefullness (sic.) of any Individual makes it desireable (sic.) that it should be sent to a Correspondent in a growing state; I shall therefore describe the method of the Drying plants very particularly, and then say a few words about the method of transporting them Alive in case it might in the Course of this Correspondence be found desireable (sic).

The day in which they are gatherd (sic. gathered) should if possible be free from Rain, and the time just when the sun has thoroughly dried the dew and all Extraneous moisture from them, this of plants which open their flowers in the morning, some few indeed open theirs in

the Evening or night and of Course must be gathered at those times, but will not when dried look so Beautifull (sic.).

No plant need be gathered may it has either flowers or fruit upon it. Some have then so minute as to make it difficult to discover them; An accurate Inspector however will surely find both one and the other in its proper season; the flowers of ferns are dusty spots or lines on the Backs of their Leaves, and those of Mosses little Balls or Cups shaped things, supported on small threads.

Specimens of flowers must be gathered at the time when they are widest open, those of fruit when they have arrived at their full size but before they have made any Approaches to ripeness.

Each specimen whether intended for flowers or fruit must be Chose with a Competent number of Leaves up on it, Except when flowers and leaves grow up on seperate (sic. separte) stalks, in that case leaves must be sent with the flowers, and tickets fastened to each with Corresponding Numbers, least by a Mistake the leaves of one might be supposed to belong to the flowers of another.

No specimen must be taken less than 15 Inches in length unless the plant should not be of that size; in which case it should be taken up root and Branch and the whole dried together.

In some plants the lower leaves differ in shape from the upper ones; in such case care must be taken to send of both sorts, this however never happens in trees and very seldom, in shrubs.

If Every plant a fair specimen with the flowers and another with the fruit should be taken if Possible, but either of them in Case they Cannot both be procured will be usefull (sic.) / the plants thus gathered are to be Layd (sic.) in a Basket not pressed Close, Least they should bruise each other, and rept¹⁾ as much as possible from the sun, that they may nor fade nor wither: in Case however where plants are to be brought from a distance it is better to have a faded or withered specimen than none at all.

When they are Brought home which should be within a few hours after they have been gathered, they are to be put in between the leaves of a paper Book, two leaves of which should be left between each plant they should be Layed (sic.) as smooth as they Conveniently Can, each leaf flat to the paper: but no leaves or flowers are to be pulled off even if they should happen to be Rumped, the Books are then to be filed upon each other and a flat board or some such thing of 10 or 12 lbs Weight. Layed (sic.) upon them, to reap the leaves of the Books together, in this

manners they are to lay 12 hours: they are then to be taken up and will be found damp the plants must therefore be shifted into other Books that are dry, during which time they may be materially smoothed, and many leaves which have been Rumped by the first laying in spread out flat and even.

Each of these Books is then to be lied up with packthread to prevent the plants from dropping out, and exposes to the sun or a fire or 3 for 4 hours During which time they should often be turned that they may be Equally Warmed, after which they should be piled upon each other again and remain in that state 12 or 14 hours more ; then the plants may be changed again into their old Books / which in the mean time must have been dried and again Exposed too (sic. to) the sun or fire ; by this time the smaller plants and grasses will be sufficiently dried, and may be put up in Books by themselves, the Larger and more Juicy (sic. Juicy) will take more time but a Repetition of the same process for a fortnight will dry almost any plant ; the Books in which they are put up may be looked at about once a fortnight, and if they are found damp, the plants Changed into dry ones 2 or 3 such Changes will secure them from all future danger.

They may then be laid a plant in each leaf of the Books, or if they are small several; as many as will Cover the surface of it. These Books should be packed in Boxes to prevent their being bent, which would break the plants in them any kind of paper that is tolerably smooth will do for this purpose, but the best of all is paper which has been printed up on if it Can be procured sufficiently Large.

Some plants there are, which are too succedent and Juicy (sic.) to be dried in this manner, or if by great Care and patience they should be, are so much Changed and disfigured that they are of Little use, these However are few, and may be sent Easily, if each is tied up in a small linnen Ray in which may be enclosed a leaden ticket, and put into Brandy — A Bottle of which will Contain several : In this manner Some fruits — also may be sent ; such as are too soft and pulpy or too Large for the other Method.

Thus much for the drying of Plants which is intended merely for the use of the Botanist.

The Cultivator requires to have living Plants of each sort that promisyary Particular Advantage either from its usefulness or Beauty, it may be Necessary therefore hereafter to send home either seeds or plants of such species as be may Require ; Seeds as they are light are easily Conveyed from a Distance, and in many Cases will answer perfectly well ; if gatherd

(sic.) dried and passed with Care, they may be divided into two kinds, viz those which are covered with Juicy pulps as most Kinds of Eatable fruits : and those which are by nature dry in their respective Caps, the first are easily Managed. They may be gathered at any time provided the fruit is come to perfect Maturity it must then be a little bruised and laid upon a Cloth or other spingy thing that will such up the Juice which Runs out in this manner by being Exposed too the free air in warm Shady place ; it will in time be dried in the same manner as the figs, Raisons (sic. Raisin), Dates, ◆ are, which are imported here in that manner, it may be went each kind packed up in a separate paper and will seldom fail to grow.

Dry seeds are more difficult to preserve they must be gathered in the afternoon of a fine day, from such plants as have come to perfect Maturity they are then to be dried by Exposing them to the open air in a shady place, for two or three days, after which they may be put up for their voyage, either in wax or in mould in the following manner, if in the former melt your wax over the fire ; then take it of (sic.), and when it is come to that Consistence between hardness and softness, so that it may be Kneaded by the hands without burning them : take your seeds and mixing them with it, Knead them up together into cakes, taking care if possible, that each seed is Closely Covered by wax on Every side ; Every species of seed should have to itself one of these Cakes, which if formed into a Cube will pack very easily and neatly in a Box, in which manner they may be sent home.

This method is particularly appropriated to Nuts, Acorns, and such Sorts of fruits.

For the second method take common vegetable Mould and drying it thoroughly in an over mix with each kind of seed, about ten times its Buck of such Earth, then put each sort into a separate small Wooden Box or Gally Pot, which latter may be tied over with leather but must not be Corked up. It is of the utmost importance in Whatever may seeds are sent, that they are fresh when put up, and that they are sent away as soon as possible ; if those which have been gathered one season arrive with us in the beginning of next, we are allmost (sic.) Certain of Success, but some there are which if kept beyond the natural time of sprouting, Can not by any art yet discovered be preserved: The Boxes in which seeds are Contained, should be stored in the Coolest part of the ship which in generally the Capt: Cabbin (sic. Cabin), but must not be put in any Part of it there they may be Exposed too (sic. to) the sun.

The other method viz. of bringing home growing plants in Boxes in more certain but it is likewise more Difficult and, in places above 3 or 4 Days Journey from the sea allmost (sic.)

Impossible: the Boxes made use of are generally Double Cubes, that is of any given Height as trend as the are high, and twice as long ; the most Convenient are of such a size as two men Can Easily Carry by the Rope Handles which are fastned at each End.

These should be filld about half full of Mould, and the plants intended to be sent planted in it, some months before they are to go ; that no plant may be sent, which is not firm by Rooted in the Earth ; when the time of sending them is Come, nail Hooks to the sides of the Box in such a manner that arching over it they may Cover the highest of the plants, and twist between hooks small ropes in the form of a net to prevent the dogs or Cats from getting them up on account of the serenity of Mould. For each Box to Hooked and netted provide a Canvass Cover, which may when put on actively protest it, and to prevent this Cover from being Seat or mislaid nail it to one side and fix Loops and Hostes to the other by which it may Occasion by be fastned Down.

The Capt. who takes Charge of them, must be particularly Cautioned that the Cheif danger plants are liable to in sea voyages, is occasioned by the minute particles of the salt Water, with which the air is Charged whenever the waves have white frothy Curls upon them, these fall upon the leaves and quickly Evaporating leaves the salt behind, which Choking up the pores prevents penpiration and Effectually kills the plant/ he therefore should never let the Covers be off Except on days, when the wind is not sufficiently high to best the water up into that the Seaman Call white Caps, he must not keep them shut up the whole voyage, for if he does they will mould and perish by the Stagnation of the air under the Covers, and if at any time by Accident or Necessity, the should have been Exposed to the wind when the waves have white Caps, he must be desired to water them well with fresh water sprinkling all their leaves with it, to wash off the salt Drops which Cover them ; in this manner they may be sent from allmost (sic.) any Distance ; many Come from China Every Year in a flourishing state.

If it is Convenient to the Captain to give up a small part of the great Cabbin (sic.) to the plants, that is Certainly by far the best station for them, nor are they much in the way, as the place which suits them best is Close to the stern windows : in this case they need not be furnished with their Canvass Covers, and they must Sometimes have Air, by Opening the windows when the weather is quite moderate.

If it is required to bring any Particular plant from Inland that may be done for 5 or 6 Days Journey without much Difficulty or Incumbrance ; The Roots must be taken up in the Cool of

the Evening and packed in damp Moss, so that Every Root may have an Inch of Moss round it, the whole then tied up in a Bundle and put into any Box, with holes Bored in it, or basket Close Enough to shade it from the sun and prevent the tops and leaves which are not Covered with moss, from being Broken or bruised, and being brought to the sea side in this, Each may be planted in the boxes and when it has taken Root sent away.

Some plants are so tender that it is not without the utmost Difficulty they Can be transported; and whose seeds also soon Leap their vegetative Quality, these are best managed, planting the fresh the fresh seeds in your Boxes of Mould, Just when the Ship sails, by this means a month or five weeks the time the seeds lay in the ground, before they shoot up is intirely saved, nor are the little plants very liable to be Smothered, this However must be done in the Cabbins.

Bulbs or Roots like Onions are more Easily sent than any other Kind, they should be gatherd Just as their flowers are faded, and being a little dried in the Shade, packed up in Boxes with a little Sand; If these Boxes are Stored in a Cool place, we are sure of 3/4 of a Years Respite, before Nature begins again to Short out leaves during all which time they are in no kind of Danger.

訳注

1) rept = receipt

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【付記】

イギリスへの短期出張はグローバルCOE経費によって可能になった。記して謝意を申し述べたい。