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# NOTES

ON THE

## UTILIZATION OF THE BEECH-MAST IN IRELAND.

BY

CHAMPAGNE L'ESTRANGE.

L

DUBLIN:

HODGES, FIGGIS, AND CO., GRAFTON STREET.

1885.

PRICE ONE SHILLING.





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# UTILIZATION OF THE BEECH-MAST IN IRELAND.

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TULLAMORE, KING'S COUNTY.

IN explanation of this *brochure*, I may say that during last summer I, in common with most people of ordinary observation, perceived that there was a most, I may say, extraordinary crop of beech-nuts or mast in this country. Having, I presume, been attacked with a fit of the disease known as "*Cacacthes scribendi*," I penned a letter on the subject, which I gave to Mr. Thomas Slattery, Newspaper Correspondent of this town, asking him to insert it in the Dublin and local papers, wishing to have the question of the utilization of the aforesaid crop ventilated. The only paper that inserted this production was the *Midland Tribune and King's County Vindicator*, for which I beg to return the Editor of that paper my thanks.

The *Daily Express* had a short and complimentary notice of it, which had the effect of my being inundated with letters on the subject, all of which I was quite unable to reply to. In consequence, I addressed a letter, on the 28th August, to the *Daily Express*, which was kindly inserted, giving my original letter in full, apologising for not having answered all my correspondents, and stating that I would communicate with the Foreign Office, with a view to obtaining information on the subject of the utilization of the beech-nut crop in



France, where, as well as most other countries on the Continent of Europe, it is looked upon as an important industry. By the courtesy of the Foreign Office officials, and with the sanction of the Marquis of Salisbury, I was furnished with some most useful details on the subject, and also a copy of an interesting work on the manufacture and purification of vegetable and animal oils, consisting of two volumes of a work well known as the *Encyclopédie Roret*, published at No. 12 Rue Hautefeuille, au Coin de la Rue Serpente, Paris. My daughter, Violet L'Estrange, has saved me the trouble, by translating the chapter on Beech-Mast Oil, *huile de faine*, which, with the other letters I wrote and received on the subject, I hereby annex.

I really know little or almost nothing on this subject, nor have I time or inclination to follow it up. I have thrown out my observation, spread my bread, or rather oil, upon the waters, and leave it to others to carry out, if they feel inclined, this industry, which I believe would be of benefit to our country.

Of course we may never again see such a crop of beech-mast; and indeed in some years, most probably next, it will be almost a total failure. Yet in most years there is a fair crop; about every seven years a most abundant one, as there was in 1877.

Notwithstanding, if any of my readers will peruse the annexed translation from the *Encyclopédie Roret*, they will perceive how easy it is to prepare the beech-nuts for the oil press. The numerous small mills now lying idle in almost every parish in Ireland, could "kiln dry" and "dress" the nuts. There are oil millers in the country, to whose advantage it would be to extract the oil, as they do now that of linseed, rapeseed, &c. The price at present ruling in Paris for *huile de faine* seems to promise an enormous profit, best olive oil being now worth about four shillings per kilo, in the Dublin market.

When we see the great value that is attached to the olive



crop in the south of Europe, and that our own beech gives as valuable an oil, if it is not from its keeping qualities more valuable, that it would give lucrative employment to the wives and children of our labouring classes during the early months of winter, I consider it well worth the while of those who are anxious for the welfare of this our "Paddy's land," to take up the matter. It appears in France that the beech-nut crop is collected in September. I presume this is owing to that country being so much to our south. At all events the nuts in this country have not yet begun to fall, with the exception of those that are "blind." They can be collected from the end of this month until nearly Christmas, as they keep well among the dead leaves, *sub tegmine fagi*, except when devoured by their numerous enemies, of which the wood-pigeon is one of most formidable.

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*Extract from DAILY EXPRESS, 28th August, 1885.*

### BEECH-NUT OIL.

TO THE EDITOR OF THE DAILY EXPRESS.

SIR—With reference to an article which appeared in the *Daily Express* some time since, founded on a letter of mine to a local paper, the *Midland Tribune*, I beg to state, in answer to the numerous letters I have received on the subject from all parts of Ireland, that I have not entered into this speculation on my own account, and hope that my correspondents will kindly excuse my answering all their letters. Perhaps if you will kindly insert my letter *in extenso*, it will explain matters. In the meantime I beg to state I have asked the Foreign Secretary to be good enough to obtain information from some of her Majesty's Consuls in the North of France, and, on obtaining a reply, will, with much pleasure, send it to you for publication.

C. L'ESTRANGE.



The following is the letter of Capt. L'Estrange referred to above :—

SIR—At the end of the last century, and more particularly during the existence of what is now known as the “Grattan Parliament,” we have it upon record that the linen trade, now confined to the North of Ireland, freely flourished throughout the whole of our island, and that almost every farmer sowed at least sufficient flax to supply the wants of his own family, and give the females thereof employment in its preparation.

During these days there was a great demand for beech timber, to make rollers, spools, bobbins, &c., for use in the spinning, weaving, and bleaching of the flax, and, in consequence, beech timber became very valuable. Wherefore our forefathers, in hopes of benefiting their descendants, planted largely of this tree. In the time of their sons we had the great Napoleonic wars, when Nelson “swept the seas.” The wooden walls of old England had to be largely supplemented with Irish oak, making that timber a most valuable commodity. Many of the old oak forests were cut down during these times. A gentleman in a northern county informed his son in that county, “I am living on my oaks; I do not know what you are to live on.” I remember the son in straitened circumstances, who was quite as much at a loss as his sire predicted “what to live on.” But as the “death of the horse is said to be the life of the dog,” the cutting down of the oaks gave a chance to the beech to take their place, so that at the present day this tree is to be found in quantities in almost all our counties.

But to come to the point: there is the finest crop of beech-nuts, or “mast,” this season that has appeared in the memory of man. Not only does the “mast” nearly equal the leaves in quantity, even now bearing down the boughs, but it gives promise, owing to the present favourable weather, to turn out a very first-class sample of the fruit. This fruit yields a great quantity of oil, quite equal in flavour and delicacy, it is said,



to olive oil, with the advantage of keeping longer sweet. The oil is extensively prepared in France, and the "marc," or residue which is left after the oil is expressed, is used as food for cattle, poultry, and pigs. A too great use of this "marc" is said, however, to engender a disease in swine, called "garget" by the French. What it is I do not know.

In my opinion, if it were made known in time that a certain sum per cwt. would be given for "beech-mast," middlemen in the different counties would find it to their great advantage to employ the women and children in their neighbourhoods to collect some of the thousands of tons that will otherwise go to waste, and thereby make money themselves, give useful employment, and perhaps start a fresh Irish industry. I presume that there are parties who have the requisite machinery in this country to treat the beech-mast; if not, it could be put up at a small expense. In France, I am told, the "mast" is collected by close-toothed rakes; the leaves are easily after collection separated, and the mast packed in ordinary corn sacks.

While on this subject I may remark that it is not at all generally known that the beech-mast is the natural food of the turkey in its native woods of North America, and that on no other food do they thrive so well, or attain such a delicate flavour. I tried the experiment some years ago when I was stationed in the County Leitrim, and lived at a place called Drumrahan, where the beech abounded. I bought my turkeys in September at a low price. When they had gleaned the corn stubbles, the mast had begun to drop, and after having been once driven *sub tegmine fagi* they never failed to find their way back; and even during the snows of winter managed to come home at night crammed with beech-mast, so as to scarcely relish the handful of oats they were given, to roost in the trees near the fowl-house. Turkeys should never be housed at night when once reared, no weather being too severe for them, and they thrive far better in the air, starting at break of day to their beloved beech-woods.



One word more while talking of Irish industries, of beech, and above all, of turkeys. It is a fact very little, if at all, known, that the truffles for which such large sums are paid to stuff our turkeys grow freely under our Irish beech-trees! Thus nature has provided that while no ordinary tree or herb will grow under the beech, this most delicious "cryptogram" should make its shade its favourite habitat, and there await in its underground retreat the period when the turkey, having prepared itself for its doom, can lie down to rest (before the kitchen fire), with its neighbour, the truffle, peacefully slumbering in its bosom.

A late eminent *chef-de-cuisine*, when on the staff of Earl Carlisle, discovered that it was by no means necessary to send to Perigord for his truffles, as they were in plenty under the beech trees of the Viceregal Lodge. I may whisper that these are also to be found at the Chief Secretary's official residence. Truffles have for generations been gathered under the beech trees of Headford Castle, County of Galway, and in my opinion are distributed throughout our isle. Some people imagine that a truffle dog is required to discover this cryptogram. When they are scarce a dog is an advantage, but not necessary. When ripe, the truffle is soon discovered by a quick eye. Vendors of the Perigord truffles say that our Irish truffles have not flavour. I have, however, been told that this is not the case by a first-class *cordon bleu*.

Throwing out these crude hints about two or three Irish industries,

I am, dear Sir,

Yours faithfully,

C. L'ESTRANGE.



*Extract from DAILY EXPRESS, 9th October, 1885.*

## BEECH-NUT OIL AND CAKE.

TO THE EDITOR OF THE DAILY EXPRESS.

SIR,—You were good enough in your paper of the 28th of August last, to insert a letter of mine on the utilization of the enormous crop of beech-nuts which we have this year. As I then stated I would do, I wrote on the subject to the Foreign Office, from whom I have received the enclosed communication, and also a work issued by Monsieur Roret, 12, Rue Hautefeuille, Paris. It appears from the above that the *huile de faine* is now worth ten francs per kilo in France. In Monsieur Roret's work it is stated that a given weight of beech-nuts will produce from one-eighth to one-fourth of oil. As a "kilo" is a little over 2lbs. avoirdupois, it follows that a cwt. of nuts should produce, at least, seven "kilos" of oil, worth £2 16s.

I consider it would be well worth the while of owners of beech-woods to at once take measures for the collection of this most valuable crop, which, if not used in this country, would most assuredly command a high price in the French market. I propose to translate Monsieur Roret's interesting chapter on the *huile de faine*, which, I hope, will be in the press next week.

Yours faithfully,

C. L'ESTRANGE, R.M.

Tullamore, King's County, *October 8th.*

P.S.—If the enclosed statements are correct, the beech-nut crop should be worth, at least, £40 a ton in Dublin. What employment this would give to our labouring classes in even collecting it! Monsieur Roret states in his work that a beech-tree, on the banks of the river Nive, gives annually 180 kilogrammes, or  $3\frac{1}{2}$  cwt.



FOREIGN OFFICE, *September 24th*, 1885.

SIR,—In reply to your letter of the 19th instant, I am directed by the Marquis of Salisbury to inform you that his Lordship has requested the Commercial Attaché at Paris to obtain information respecting the utilization of the beech-nut crop in France.

I am, Sir,

Your most obedient and humble servant,

T. V. LISTER.

CAPTAIN L'ESTRANGE, Tullamore,  
King's County.

FOREIGN OFFICE, *October 1st*, 1885.

SIR,—With reference to your letter of the 19th ultimo, I am directed by the Marquis of Salisbury to acquaint you that an endeavour has been made by her Majesty's Embassy at Paris, to obtain satisfactory information on the questions raised therein relating to the beech-nut crop.

It appears that there are no official statistics obtainable, but answers to several of your questions will be found in the accompanying volumes of the *Encyclopædia Roret*, Tome I., pp. 132-136, to which I am to refer you in answer to the first three points.

With regard to the present price of the oil, I am to enclose an extract from the British Chamber of Commerce in Paris, which puts it at 10 francs per kilo.

In reply to your fifth question, as to the relative value of the "marc" or refuse as a cattle food, it is difficult to state the amount with certainty, but it would appear from the tariff of the French Commission des Valeurs, to be about 12 centimes per kilo.



Other interesting points with reference to beech-nut oil will be found illustrated in Tome II. of *Roret's Encyclopædia*, in which there are drawings of plant and machinery for the extraction and cleansing of oils.

I am, Sir,

Your most obedient, humble servant,

J. PAUNCEFOTE.

CAPTAIN L'ESTRANGE, R.M., Tullamore,  
King's County.

*Translation of section 15, chapter 15, of the "Encyclopédie Roret," Vol. I., on the manufacture and purification of vegetable and animal oil.*

September 28, 1885.

BEECH-NUT OIL AND CAKE—*huile de faine*. This year's crop seems to have failed, or nearly so. There is none whatever on the market, and buyers are offering any price to procure some (10fs per kilo). Some dealers will offer *huile d'arachide*, saying it is *huile de faine*. Last year's supply was sufficient for all wants. Next week will bring some more information, as buyers are scouring the country to get ever such a small supply.

The beech-nut is called in the French tongue "faine;" the beech-tree is known as "Hêtre" (*fagus sylvatica* Lin). The tree abounds in the French forests, some of them being called "Essence de Hêtre," being entirely composed of beech.

This tree grows to a great size and height. Doctor Tournou found one on the banks of the river Nive, in the Basque country, the trunk of which measured 22 feet 9 inches in circumference; it produced every year 3 cwt. 2 qrs. 4 lbs. of fruit. It is unnecessary to dwell on the cultivation or



description of the beech, as the former requires no care, and the tree itself is so well known that a description would be superfluous.

It must be said that the beech is one of the most valuable of trees, as much on account of the timber, which is used for cartwright's work, machinery, and firewood, as for the extraction of oil from the nuts.

The nuts of the beech should be gathered towards the end of September, and they should be at once dried, by spreading them in a very dry, airy place, sheltered from the sun. This drying can be much assisted by passing a current of hot air through the place where they are being dried.

It is said by the means of this precaution much more oil may be extracted.

When the nuts are dry, they are winnowed, to separate the empty from the full. By some they are handpicked; this is the best way, but it is long and expensive; they can also be riddled in the wind.

The seeds are enclosed by a very brittle shell or capsule, and then a pellicle, which gives an unpleasant taste to the oil. In general the oil is made without removing this shell; but experience shows that when it is taken away a seventh part more of oil is gained. The outside shells are removed by passing them through millstones (such as are now used for wheaten flour), but far enough apart to remove the shell without damaging the nut.

The pellicle can be separated by putting the peeled kernels in bags and winnowing them. Once the nuts have been reduced to the desired state they can be made into a paste by various processes.

1st. By putting them through a pestle mill, they can be crushed gently, care being taken to add water from time to time to bind the paste, which is then brought to the press like other oleaginous seeds.

500 gramme of water is sufficient for 7.5 kilos of nuts. When oil exudes, on this paste being pressed between the



fingers, the nuts are sufficiently macerated. A quarter of an hour in the pestle ought to be sufficient to obtain this result.

2nd. The submitting the nuts to the action of vertical millstones of hard stone, the description of which will be given.

3rd. The next way is grinding. When the nuts are crushed, they are then reduced to a thick flour by passing them through a flour mill. The millstones do not get choked, if they are not driven too fast, and there is a sufficient current of air.

When a fine flour has been obtained it is made into a paste with water. It is then submitted to the press in the same way as other oleaginous seeds, and also run through the different presses we have described, for olive and other seeds of this description. When all the oil is extracted, the "marc" or residuum should be replaced under the vertical millstones. It is watered with tepid water, which assists the production of an oil that is used for lubricating purposes; this paste is again put through the press. The first oil is called virgin oil, and is the best. Sometimes the residue is again passed through the mill mixed with boiling water, in order to extract an oil of an inferior quality.

Beech-nut oil when well prepared is of an amber color. It has no smell, and a very delicate taste, particularly if it has been made after the nut has been separated from the skin and pellicle.

This oil is very good for alimentary purposes, and supplies the place of olive oil.

It keeps better than other oils, and is said to improve by age. It is "delicate" at five years old, and keeps from ten to twenty years, and even longer.

Manufacturers are not agreed upon the quantity of oil that can be extracted from a given weight of beech-nuts. Some have obtained a fifth, others a sixth; in fact, the experiments of Mont-de-Marsan, in 1793 gave fourteen kilos of oil for fifty kilos of nuts. This difference in the produce appears to be



due to 1st.—The state of the crops, as to its growth, ripeness and dryness; 2nd.—To the fineness of the paste or flour; 3rd.—To the efficiency of the presses; 4th.—To the care that has been taken in picking the beech-nuts.

We believe we ought to add here a table of the different modes of extracting the oil, as published by the “Commission of Agriculture and Arts.”

As to the necessary accessories in the manufacture of beech-nut oil, we must refer our readers to our former chapters on the subject of oleaginous seeds.

TABLE OF THE DIFFERENT MANNERS OF EXTRACTING  
BEECH-NUT OIL.

The Beech-Nut.	With the shell	pounded, crushed, or ground.	1st. Pressed without heat.	With water, greater produce and flavour.
			2nd. Pressed with heat.	
	or	[N.B.—Pounded, the oil is less sweet. The first pressing gives half the quantity of the second.]		
	without the shell.	Ground, crushed, or pounded.	See the following experiment for exactly the same nuts which gives greater produce. This is the Dutch method.	

3.50 kilos of cleaned flour pressed without water only returned 93.75 grammes of insipid oil; upon adding 310 grammes of tepid water, the produce was 4.36 grammes of an oil having a taste like almond oil.

The residue, heated to 30° Reaumur, with the addition of 310 grammes of hot water, gave 110 grammes of muddy oil.—Total, 632 grammes.



## ANOTHER EXPERIMENT.

50·75 kilos of two-year-old flour were passed rapidly through the separated stones of a flour mill to pound it, and after having been passed twice through a “tarare,” or winnowing machine, gave—

Coarse flour,	...	...	...	30·70 kilos.
The refuse re-winnowed produced, brown				
flour,	...	...	...	3·90 ,,
The shells or coarse bran weighed,	...	...	...	15·50 ,,
Waste,	...	...	...	0·625 ,,
Total,				50·725 ,,

But as this calculation now shows that in this brown flour (“farine bise”) there was only 1 kilo of kernel, it follows that one 100 of unshelled flour is composed of—

Kernels,	...	...	...	...	31 kilos.
Shell,	...	...	...	...	19 ,,
Total,				...	50 ,,

To this flour was added 2·80 kilos of tepid water, which having been left to soak for half-an-hour, was passed through ticken bags by means of a screw press; after draining four hours the following results were obtained—5·65 kilos of oil.

The cake having been moistened with 2 kilos of hot water, pounded, and then left in an iron vessel at a temperature of 30° Reaumur for a quarter of an hour, and again pressed, gave—0·87 of oil.—Total 6·52 kilos.

This makes about 12·8 per 100, including the shell.

The result of the first process gives an oil that becomes clear in four days, having a sweet smell, and an agreeable taste of almonds; that of the second process, cleared more slowly; it has more colour and tasted less agreeable; at the end of a month, it had, however, greatly improved.



The result of the foregoing, and some other experiments, are :—

1st.—That the oil resulting from the first pressing is greater in quality, more agreeable in taste, less coloured, and gives more deposit than the second pressing.

2nd.—That oil from the flour, shelled or peeled, compared to that which is not, is greater in quantity, more agreeable to taste, less coloured, and leaves less deposit.

Beech-nut oil is not easily dried ; its density at  $15^{\circ}$  C is 0.9225, and it congeals at  $17^{\circ}\cdot5$  into a yellowish-white mass.

In conclusion, I must reiterate that I do not intend to personally take part in the promotion of this industry. But I think that some of our patriotic scientific societies might make the experiment upon a few hundred-weight of nuts, so that even if our crop of this year should go to loss, if the experiment proved successful, the industry might be started at a future period.

C. L'ESTRANGE.