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MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 26, Press Mis.

116-117

Dated 7th January 1869

Not to be folded or roughly handled

CIRCULAR No. 19 FOREST.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

REVENUE—FORESTS.

FORT WILLIAM, ~~NOVEMBER 28~~, 1868.

Interchange of Forest Reports, products and seeds, with Forest Departments of Foreign States.

Read again :—

Despatch from Secretary of State, No. 15, dated 15th June 1868.
Public Works Department Circular „ 10 F, „ 1st August „
„ „ „ „ „ 15 F, „ 27th October „

Read also the following :—

No. 23, dated 14th October, 1868.

From—The Secretary of State for India,
To—The Government of India.

I have considered in Council the Despatch from your Excellency in Council, numbered 8, Forests, ~~dated the 1st of August~~ which, in reply to my Despatch of the 14th June, No. 15, you inform me that you have circulated Dr. Cleghorn's Report of his tour on the Continent, amongst the Forest Officers and Agricultural Societies in India, and express your concurrence with the opinion which I gave as to the advantage which would be derived from an extended interchange of seeds, Forest products and Reports on Forest Administration, between the Forest Departments of India and those of Foreign States. The measures adopted by the Inspector General of Forests, under your instructions, seem calculated to attain the end in view; and I have caused the eight letters received in Dr. Brandis' letter to the Under Secretary of State, No. 51, dated 1st August 1868, and the eight bags of seeds subsequently received, to be despatched at once according to their respective addresses.

2. In communications with the ~~Foreign Officers and Societies~~ to whom you may think it desirable to forward such specimens, the Inspector General of Forests will not fail to inform them that the Governments in India have much satisfaction in thus introducing to the different countries of Europe, trees, fruits and other products, which it is hoped may ultimately prove of benefit to them.

3. I have directed 10 copies of the translation of the Italian Treatise on the Sumach to be sent to your Government by the mail which left Southampton on the 3rd instant, and 150 have been entrusted to the Director General of Stores for early transmission.

ORDER.—Ordered, that copies of this Despatch, and of the Treatise on the Sumach tree *(Rhus Coriaria)*, be forwarded to the Local Governments and Administrations noted in the margin, and to the Inspector General of Forests, for information.

Madras.	Central Provinces.
Bombay.	Burmah.
Bengal.	Mysore.
N. W. Provinces.	Coorg.
Punjab.	Hyderabad.
Oudh.	Central India.
Rajpootana.	

(Signed) C. H. DICKENS, *Colonel, R. A.,*
Secy. to the Govt. of India.

Major, R. E.,
Under Secy. to the Govt. of India.

To
The Secretary to the Government of Madras,
In the Revenue Department.

Ro 5 Dec/68 Nos 60 & 61.

Revenue 1868. Oct.

Circular No. 3862.

From

The Govt. of India
P.W. Dept.

Dated 28th Nov. 1868.
Received 11th Dec. 1868.
No. 1987.

Forwarding copies of Despatch on the subject of interchange of seeds Forest products & Reports on Forest Administration between the Forest Dept. of India & those of Foreign States & of the Treatise on Sumach tree for information.

No 86. 9 Jany 69

Wilh Oster

116-117-

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

REVENUE—FORESTS.

To

CIRCULAR No. 19 FOREST.

Dated November 28, 1868.

Received

v' Circ

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Interchange of Forest Reports, products and seeds, with Forest Departments of Foreign States.

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N. W. Provinces.	Coorg.
Punjab.	Hyderabad.
Oudh.	Central India.
Rajpootana.	

(Signed) C. H. DICKENS, Colonel, R. A.
Secy. to the Govt. of India.

To the Secretary to the Government of Madras, in the Revenue Department.

Proceedings of the Madras Government, Revenue Department, 9th January 1869.

No. 117. ORDER THEREON, 9th January 1869, No. 56.

Forests, No. 2.

Communicated to the Officiating Conservator of Forests and to the Board of Revenue in continuation of G. O., 5th December 1868, No. 3,038.

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Officiating Conservator of Forests.
,, the Board of Revenue.

Exd. G. A. Turton,

Govt. of {1869} Madras.

REVENUE.

To

THE OFFICIATING CONSERVATOR

OF FORESTS,

&c., &c., &c.

Dated January, 9th.

Recd. *Encl.*

C. O., 9th January 1869, *No.* 56.

JANUARY.

Nos. 116-117.

Interchange of Forest seeds, &c., between Indian Forest Departments and Foreign State. —Circular from Government of India on this subject, communicated to Conservator of Forests and Board of Revenue.

ON THE

CULTIVATION OF SUMACH

(*RHUS CORIARIA*),

IN THE VICINITY OF COLLI, NEAR PALERMO.

By Professor INZENGA.*

Translated by Colonel H. YULE, C.B.
Communicated by Dr CLEGHORN.

From the Transactions of the Botanical Society, Vol. IX., 1867-68.

I propose shortly to describe the treatment of Sumach, as it is prosecuted in the vicinity of Colli, and I venture to hope that my work may be useful in some degree to those who have so courteously urged me to write on the subject.

Before going into a practical description of the cultivation, it seems indispensable to give some preliminary notice as to the soil and farming economy adapted to the profitable prosecution of this business, in order that every one may judge for himself of the localities where he wishes

* Published in the "Annali di Agricoltura Siciliana, redatti per Istituzione del Principe Castelnuovo." Palermo, 1852.

Note by the Translator.

Professor Inzenga's paper is rather diffuse in expression, hence this is an abstract and paraphrase, not a literal translation; but I believe it conveys the sense of all the essential parts of the paper. The abstract was not originally written for the press, but only for the use of my friend Dr Cleghorn. As, however, he wishes to publish it, I have added a note at the end on some points of interest.—H. Y., *Palermo, Feb.* 20, 1868.

to introduce it, and anticipate what is likely to be the result of such an experiment.

1. *Soil.*—The soils best adapted to the sumach are those which, in our climate, are least suitable for the other crops forming the staples of our agriculture; I mean loose calcareous soils, which, in the absence of rain, become excessively dry, and are commonly called *warm* soils. *Rhus Coriaria* always flourishes best in dry places, and any excess of damp or stagnant moisture is destructive to its growth. It grows, indeed, in fertile clay soils; but though this fertility gives a luxuriant appearance to the plant, its produce will never be of the same quality as in drier tracts. The sumach grown in the dry calcareous soils is less luxuriant in aspect, and does, in fact, produce a smaller amount of foliage, yet this foliage always possesses those tanning virtues which render it an object of commerce. The essential principles which bestow these virtues are found in a less diluted state, and hence in the drying that takes place after gathering there is less loss of weight in relation to volume. For instance, take two equal volumes of fresh sumach leaves, one from a rich wheat soil, and the other from a poor and warm soil; after both have been dried, you will find that the latter will be much the heavier, will have the stronger odour of the peculiar tanning principle called by experts *Spirit of Sumach*, and hence will have the greater commercial value. Apparent luxuriance of foliage is, therefore, no test of value.

The soil best adapted to the sumach is one eminently dry, and which does not long retain moisture after a fall of rain; hence it is no wonder that it thrives especially in hilly lands with gentle slopes, where the waters drain off rapidly. The sumach leaf is a bulky article, and therefore, in view to profitable cultivation, there should be ready and economical means of transport to its market. These facilities of transport exist in our old sumach localities, which are generally in the neighbourhood of the seaboard, and especially lie round our commercial centres. It is questionable if the culture would pay beyond the reach of carriage roads.

2. *Propagation.*—The sumach is propagated by suckers which spring up round the adult plants. These suckers are procured at the first digging bestowed on the adult plants; for in that operation it is usual, besides shifting the soil (which is its special object), to include the removal of all the suckers which have grown up round the parent plant; and as this operation takes place in December and January, the season coincides exactly with that proper for planting.

The best suckers will be got from those lands in which the sumach flourishes best, and from the plantations that are still in the vigour of their growth; from old plantations, tending to decay, you will never get vigorous suckers. The price of these suckers varies generally with the price of the produce in the market; and I find, on inquiry, that when the sumach leaves are selling, say at three ducats a quintal,* the suckers will sell at two ducats a thousand. This is, of course, merely a general approximation, and liable occasionally to wide exceptions.

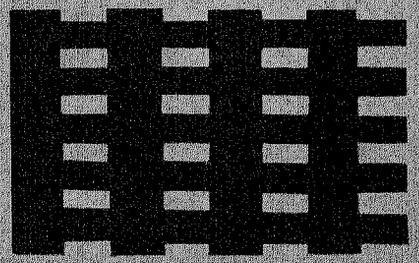


Fig. 1.

3. *Planting.*—The sumach plants are set in lines at intervals of about 2 feet. In calculating the number of plants for a given acreage, a considerable surplus should be allowed, in order to replace withered, dry, or sickly suckers, or those unprovided with capillary filaments or radicles. The holes for the suckers are to be made at intervals of 2 feet, rectangular in shape, 2 feet long by 8 inches wide, and 8 inches deep, using the pick to deepen if you meet the rocky sur-

* A trifle over 10*s.* for 175 lbs.

face. At each end of each hole* put in a sucker in contact with the extremity of the hole, then cover them

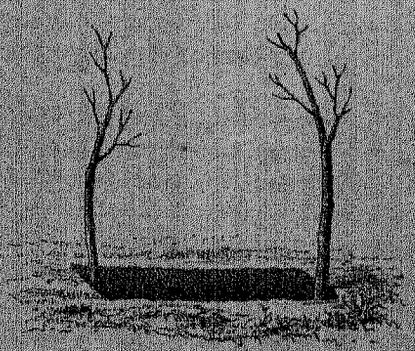


Fig. 2.

in and tread down the earth. But I repeat, that great care must be taken to eliminate weak, beardless, and unpromising suckers.

4. *Culture of first year.*—After the suckers have been



Fig. 3.

planted and well trodden round, you dig deeply and carefully the earth from the intervals between the holes, throwing it up in parallel ridges. After this is done, the suckers must be cut or pruned to a height of 8 inches with the *ron-*

* See fig. 1. The white spaces represent the holes.

cone or pruning-hook, and in doing this, care must be taken not to tear up the suckers which have not yet taken root. For this purpose, it is usual for the labourer to plant his left foot firmly against the neck of the sucker, and then to cut towards the right, so that the foot keeps the sucker in place.

The intelligent cultivator spares no pains in the first year to secure the prosperity of the young plants, digging the field continually, whenever the induration of the ground or the growth of weeds renders it necessary. So, after the first operation (which we have described as throwing up the earth in parallel ridges), you follow with a second and similar operation in the transverse direction. The third operation consists in levelling the ridges again, and this is usually done in May. Between May and August, the surface should be twice dug over to remove weeds. Exact times cannot be laid down for these operations, as so much depends on the weather. It is enough to remark, that the soil must be kept loose and free from weeds, which are especially troublesome the first year, because the ground has probably been previously occupied by natural pasture.

5. *First year's gathering.*—In September the leaves are stripped, leaving only those at the very extremity of the branches which are not yet mature, and are the last to de-

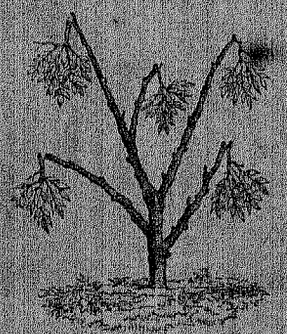


Fig. 4.

velope. The leaves are put into baskets and carried to a central point to be dried. This is called the *aja* or *aria* of the plantation ("threshing floor"). In October the

leaves upon the ends of the branches will be mature, and should be gathered. This is done by breaking the distal twigs, but without entirely separating them, leaving them attached by a strip of bark, and hanging clear of the soil. After a few days of dry weather, these will be sufficiently dry, and can be nipped off.

6. *The aja or threshing-floor.*—This requires different conditions from that of a threshing-floor for cereals. The last, as all know, is formed on the higher points of the farm, exposed to prevailing winds. But in threshing the sumach an opposite condition is required (*i.e.*, a position protected from the dominant winds); for the dry, broken, and partially pulverised sumach leaves are easily blown away and lost. Indeed, the operation of threshing requires calm weather, and if the wind rises it must be suspended, whilst the leaves are covered up with cloths, and weighted with pitch-forks, branches, &c., to preserve them from dispersion. The floor ought, however, to be open to the sun's rays; for in order to the effectual separation of the leaves from stalks and branches, the highest degree of dryness is required, and for this reason the operation is generally performed in the middle of the day.

7. *First year's pruning.*—In December the branches are removed. In doing this, take care not to cut into the main stem, but clear the last crown of buds at the point of demarcation between stem and branches. Usually care is taken to make the cut parallel to the stem, so as to leave a clear circular section, and not obliquely, leaving a wedge-like stump; for this stump (it is found), ceasing to derive vegetative vitality from the shrub, is apt to slough, and this spreading, abridges the life of the plant.



Fig. 5.

The pruning-hook is represented in fig. 5. The uncouth shape is essential to the work, for it has another use beside that of pruning. In cutting the sumach, besides the branches above ground, we find others springing from the neck of the plant, which are often covered with soil, and these ought also to be cut close to the stem. To do this

without injuring the edge of the knife, you use the elbow of the blade to dig away the earth from the neck, and then applying the edge you cut the branch with facility. The blade of the pruning-knife is about 5 inches long from the insertion to the angle, and about 8½ inches from the angle to the point.

8. *Second year's cultivation.*—Immediately after pruning, you dig about the sumach, raising the earth in cones round the plant, and leaving the stem well exposed and surrounded by these cones, generally in the middle of four such. In March is the second operation, which consists in shifting and again levelling the soil. This month is chosen, because in this district (near the sea) we have no longer reason to dread heavy rains, such as would be followed by inundation of the soil, and the development of weeds, which are specially injurious to the sumach. In May you perform the third and last operation, by lightly digging the surface, so as to render it porous and friable, and by destroying any remaining weeds. Care must be taken to avoid hurting the tender suckers springing from the roots round the parent plant, as these will be required for propagating. But if any of these are found *close* to the parent plant and springing from the main stem, they should be destroyed with the spade; however, as yet there will be no great growth of suckers. This third operation is often neglected; but it is highly desirable, for it produces not only a sensible effect on the organic increment of the leaves, but contributes also mechanically to augment their weight in the following way:—The sumach leaves, owing to that sensible transpiration which characterises them, and which condenses on their epidermis to such a degree that they are always somewhat unctuous to the touch, readily attract dust, and the process of digging the dry soil in May, when the leaves are fully developed, raises a quantity of fine dust. This accumulates on the unctuous epidermis, and thus adds positively to the weight and produce of the plant.

9. *Renewal of plants in the second year.*—In the second year of culture some suckers will be found dead, and these plants should be replaced at the time prescribed in paragraph 2, before giving the first digging of the new agricultural year.

If the replaced plants should die also, you may conclude that there is some local mischief in the soil, injurious to the life of the plant, and it is not worth while to repeat the process. Hence, after the second year, such renewals are seldom practised.*

10. *Second year's gathering.*—This usually occurs in the month of July, and with it is combined the pruning of the plants. On this occasion the entire branches are cut from the trunk with the leaves attached. The operation is to be performed as described in paragraph 7, *i.e.*, at the insertion of the branches, without wounding the main stem or injuring the buds below, which are the most important accessory organs of the plant.

The proper period for gathering has always relation to the maturity of the foliage, and the vegetative condition of the sumach. When all further development ceases in the flowers, or in the leaves at the extremities of the branches, then is the time to gather, as the leaf has attained a maximum of weight. Delay would tend to deterioration in quality and weight. The commencement of deterioration is shown by little black specks appearing on the leaf, which turns yellow and diminishes considerably in weight, so that there is positive loss both of quality and quantity. The exact time of gathering is thus one which an intelligent planter will watch with great care. July is the usual time for gathering, but it has sometimes occurred as early as the middle of June. The pruner will leave every stem cleared of all branches, using his hook as already described (paragraph 7). He accumulates the branches under his left arm till he has got a sufficient load, and then spreads them on the ground, treading the leaves together with his feet, so that they may be as much compressed and as much covered from wind as possible during the drying process, and also present a small surface to the sun's rays, which act detrimentally on the leaves they strike directly. Over the bundle of twigs which the man has spread out and trodden, a second pruner spreads his bundle, and likewise treads it down. Two

* At Cefù, such cases are generally due to more than usually impervious hollows in the subjacent *tufa* retaining moisture. The greater part of the valley of Palermo is underlaid by a coarse sandy tufa, which in many places comes very near the surface, and in some is absolutely naked.

such bundles form the *sheaf* of sumach spread to dry. In laying down the twigs, it is best to place the lower part towards the prevailing wind quarter, as in that position the leaves are less liable to be detached and dispersed.

After the gathering has been completed, there remain here and there about the parent plants a number of suckers springing from the roots. These being of later growth, and also shaded by the main branches, do not afford leaves fully matured at the time of gathering. But some twenty days later these leaves will be mature, and should be stripped, care being taken, however, not to lop or injure the extremity, as these suckers will be wanted at the beginning of the next season for propagation. The leaves of the sumach plants, on the lower parts of the stem and branches, come to maturity sometime before the season that has been indicated for the harvest, and if they be not gathered specially they wither and fall. Though the amount so lost is not considerable, it is worth while, when the culture is on a small scale, or when prices are running high, to make a preliminary gathering of these leaves. But this will scarcely pay when hired labourers are employed, and is usually done by the family of the cultivator. All the sumach gathering is generally intrusted to boys.

11. *Transport to the threshing-floor.*—This is one of the most fatiguing labours of our husbandry. After the branches have been dried on the field they are heaped upon a canvas cloth of some 6 or 7 feet square. Three corners of this cloth are furnished with wooden rings, and the fourth with a cord 9 feet long. After putting on the cloth as great a heap of twigs as it will hold, usually about 80 rotoli (140 lbs.), the cloth is laced together by the cord and the three rings, and is then hoisted by a single man's strength and dexterity on to his own shoulders. He goes off with it to the floor, and returns for a new load, continuing this heavy labour throughout the day. The average strength of the peasants is not sufficient to endure such toil, and to continue it for days, hence this business is the employment of the local athletes. Each man employed on this fatiguing work receives 6 tari* (2s. 1½d.) daily, and in a season

* The paper was written seventeen years ago. In Palermo, as in most places, wages have since risen considerably.

they gain a good deal more than the common labourers; but, after the harvest is over, they need some days' rest to heal the scars inflicted on the neck and shoulders. It is a degrading and unnecessary practice, as there is no reason why the sumach should not be carried on animals. If there is loss in carrying so much dry sumach in that way, then it should be taken green direct to the threshing-floor and dried there.

12. *Cultivation and harvest after the second year.*—The practice is the same as in the second year. When, in course of years, the plants lose their luxuriance, it has been found very beneficial, in reviving their vigour from time to time, to dung and sow the ground with beans.* The sumach so treated acquires new strength, and the expense of this manuring process is always paid with usury.

In the Palermo district the sumach is not so long-lived as in some other parts of Sicily. Its duration never exceeds fifteen years, and before becoming extinct it drops off here and there, leaving vacancies which cannot be filled; this being, in fact, a law that generally regulates the extinction of a generation of plants of many species. When these spaces become considerable, the farmer turns the soil to account by growing on it beans in manure,* alternated with barley, the cereal that suits our soil best. After the total extinction of the plantation, the soil may revert to the ordinary crops of the country; but at first it will require ample manuring, as the sumach is an exhausting crop. General experience shows that the sumach does not readily admit of the close vicinity of other cultivated plants, and in a mixed plantation it will neither thrive nor let thrive. It is particularly bad husbandry to plant sumach with olives. I cannot say accurately how long an interval should elapse before a soil which has borne a sumach plantation could be profitably employed again for the same kind of produce; but, approximately stated from experience, it should not be less than ten years.

13. *Threshing the Sumach.*—This is done at the hottest

* The expression is "*vi accopiamo a quando a quando una seminazione concimata di fave.*" Though this is a little obscure, I have little doubt it refers to a practice which seems to be common in Sicily of mixing the seeds of beans and lupins with manure, and, when the plants are green, digging them into the soil. Such an application appears to be called in Italy *sovescio.*—H. Y.

time of day, as the leaves are then driest and detach most easily. The sumach is threshed with the flail, which is called by our country people "*bovillo,*" or "the little ox."* The handle is of beech, 6 feet long, and the smiting

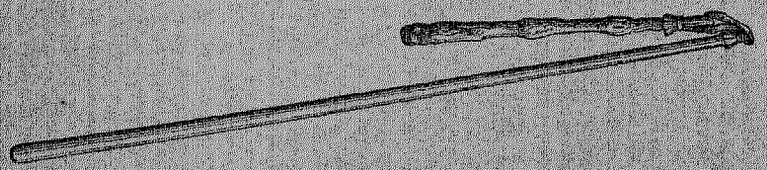


Fig. 6.

part is a knotty stick about 2½ feet long, thicker at the loose end, like a club. The sumach is strewed over the floor, and the threshers stand in two lines opposite to one another, using the flail with a rhythmical alternation. One line advances across the floor while the other retreats; and when the whole floor has been crossed, the first line retreats in turn and the second advances, and so on until the whole length and breadth of the floor has been equally and thoroughly threshed. One or more labourers, armed with wooden forks, pass about the floor removing the twigs already stripped, the leaves only with their stalks and mid-ribs remaining. After the threshing is finished, these are gathered into a heap, the stalks being removed with the hand as far as possible to bring the sumach into a marketable condition, and in this state the threshed leaves are stuffed into long hempen sacks, weighed, and either stored away or transferred on the spot to the purchaser.

14. *Qualities of Sumach from the threshing.*—The sumach thus threshed in the highest state of desiccation, under the noontide heat, comes out in a state of great trituration, and is sold only to be ground to powder in the mill. But if sumach in leaf is required, it must be as little broken as possible, and hence the mode of threshing must be modified. The sumach, in such case, is brought to the floor before it is perfectly dried, and it is threshed in the morning, instead of at midday. In this way the leaves remain entire, and only separated from the stalks, some small portion

* Of course, from its performing the duty of the ox in "treading out the corn."

tions adhering to the twigs. After the sumach for bales has, in this condition, been gathered, the twigs, with such leaves as adhere to them, are well dried and threshed a second time in full noontide heat, producing a second supply of triturated leaves for the mill. The sumach obtained from suckers and from the first year's plant is always threshed for the mill. It is of inferior quality, and fetches a lower price than that of the pruned plants of full growth. It is easily known by its colour and lightness. The sumach from the October nippings of the first year is also threshed for the mill. This is the lowest quality of all, and distinguishable by its whitish colour, its extreme lightness, and the absence of the special aroma of the tanning principle. As this nipping takes place in October, when the air is already cold and rain begins to fall, the threshing is sometimes deferred till the following summer, the produce being stored meanwhile in a dry and airy place.

15. *Relative value of the different qualities of Sumach.*—This can only be given approximately, but I have taken pains to get the information as accurately as is practicable. I will suppose that sumach in leaf (which is the highest quality) sells at 1 ounce the quintal,* and on this standard I calculate the value also of the inferior qualities as follows:—

Sumach in leaf, for bales, . . .	10s. per 175 lbs.
To grind, ...	9s. 4d. ,,
From the first year's strippings, .	6s. ,,
The first year's October nippings, .	4s. ,,

16. *Produce of a Sumach plantation.*—Such a plantation, well cultivated and in the height of its vigour, usually produces with us 2 *quintals*, 35 *rotoli*, to every legal *tumolo* of surface (409 lbs. to 0·27 of an acre, or 1515 lbs. to an acre nearly). Generally speaking, the produce goes on increasing from the first to the seventh year of the plantation; it then begins to decline, and continues to do so till the exhaustion of the plants, about the fifteenth year.

17. *Miscellaneous minor products of the plant.*—Besides the leaves, the farmer gets some positive profit by the

* About ten shillings per 175 lbs. The ounce is a very small fraction more than ten shillings in value.

various *rejectanea* of the threshing-floor—first, from the twigs which are tied in bundles on the spot; secondly, from the leaf-stalks. Both are sold for burning,* chiefly to bakers. The earth detached by the flail on the threshing-floor, and which, from its greater weight, lies below the threshed leaves, is reckoned one of the sources of profit, and is mixed with the threshed sumach. This is a custom of the business, and cannot be objected to by the buyer; and though it is chiefly earth, no doubt there is some sumach powder mixed with it which cannot be separated.

The grinding and packing of sumach forms no part of the farmer's business, nor of my subject. I may state, however, that the grinding is performed under vertical millstones, similar to those common in Sicily for bruising olives. In this process all is ground to powder, except the small midribs, which are removed by the hand during the grinding. These are subjected to a greater force, and reduced completely to powder in the ordinary horizontal water mills, and then added to the produce of the ground leaves.

18. *Prices current of Sumach in Palermo.*—I have collected with much pains from commercial lists, newspapers, and the private books of merchants, the mean prices during the last twenty years, confining myself to the price of sumach in leaf (or in bale), from which the price of the other qualities can be deduced by the ratio already given. [It does not seem useful to give the table in question. The lowest price obtained in 1841 is 25 taris = 8s. 5d., and the highest in 1849, 1 oz. 14 taris = 14s. 10½d.]

19. The foregoing is a true account of the sumach culture as practised at Colli. Much more might be said regarding the influences of weather, such as frost-bite on the leaves, or the summer north-west wind, or the attacks of insects, which in some years cause great havoc among the plants, or the relative duration of the plant in different soils; but these investigations require much time and study.

Translator's Note.—I extracted the statistics of the export of sumach, at the various ports of Sicily, during the years 1857–66, from tabular statements preserved in the Consul's office at Palermo, in view to appending them to this

* The leafstalks are much used for kindling fires in the hotels of Sicily.—H. C.

paper. On examination, however, I find these statistics appear on the surface to deserve so little confidence that I omit them. The price of sumach has greatly risen of late years, being now from two to three times what it was when Professor Inzenga wrote, and this rise is said latterly to have restricted the export. It is said that adulteration has also greatly increased. It may be worth while to add that the sumach is described by Theophrastus (Bk. iii. ch. 18) under the name of *Rhus* (ῥοῦς); his description of the plant appears to be good, so far as I can understand it, and he mentions the use of the leaves by leather-dressers. So also does Galen, as quoted by Budæus in his note on Theophrastus (ed. Amsterdam, 1844, p. 272). Pliny also says the shrub *Rhus* is called *Coriarius*, and its dried leaves used, like the pomegranate rind, in tanning skins (xxiv. 54).

I have not found, in a short search, anything on the antiquity of the Sicilian trade in this article. *Somacho* appears in a list of duties at Florence and Pisa, contained in the Commercial Hand-book of Giov. da Uzzano, 1442 (*see* Della Decima, &c. iv. pp. 24 and 59), and this is the oldest mention I have met with of the modern name of the plant. It is borrowed from the Arabic *summáq* or *samáqil*.

H. Y.

P.S.—Since writing the above, I have received, by the courtesy of a merchant in Palermo, a return from the custom-house, showing the export of sumach on which duty was paid in 1867. My informant adds that a large allowance must be made for contraband export beyond this return.

Sumach in leaf, . . .	kilos,	2,323,130
Or say tons,		2282
Ground, ...	kilos,	15,692,699
Or say tons,		15,413

There is nothing peculiar in the process of pulverising sumach except the very extraordinary atmosphere produced in the mill. The interior is dark as the most intense London fog, and one comes out saturated with fine powder. The odour is not unpleasant, something between snuff and chamomile. The workmen all wear a handkerchief over nose and mouth, but it is said to be rather wholesome than

otherwise. The machinery consists merely of pairs of vertical stones grinding in a basin, just like a cement mill. An engine of 25-horse power turns four pairs; 100 lbs. of leaves produces about 84 lbs. of ground sumach; and the cost of grinding and bags is about 1s. 6d. per 100 lbs. This season (1868) the price of leaves varies from 10s. to 17s. per 100 lbs.

H. Y.

Interchange of Forest Reports, products and seeds, with Forest Departments of Foreign States.

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&c. &c. &c.

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13 Jan 69 From the Offg Conservator of Forests

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