# SAXON MERINO SHEEP.

LETTER TO HIS EXCELLENCY JOSEPH A. WRIGHT, MINISTER TO BERLIN, FROM ALEXANDER SPECK VON STERNBURG, OF LÜTZSCHENA, GERMANY, RELATIVE TO SAXONY MERINO SHEEP, &c., &c. &c.

LÜTZCHENA, NEAR LEIPSIG, SAXONY, *July* 22, 1859.

DEAR SIR: I have much pleasure in giving you an account of the method of raising sheep, together with some information as regards the history of the Saxon merino, and other matters in connection with the agricultural pursuits followed on this estate, which may be interesting to your friends.

You are no doubt aware that Spain is the country to which the world is indebted for the "Saxon merino," the most perfect and noble of the different races of sheep. It has been proved that the Spanish sheep, more perhaps than any other domestic animal, is liable to undergo a great change, under different domestic influences, both with regard to size and wool; for, whilst the original Spanish merino has deteriorated in some countries so as to become nearly valueless, the reverse has taken place under the influence of a climate congenial to it. Thus, according to some historians, (Weckherlin, &c.,) the Spanish merino was introduced into England as early as the 15th century, and is now represented there by the south-down, or English short-wooled. In 1723 it was introduced into Sweden; yet how different now is their progeny. In England, the rich and ever-verdant pasturage and humid climate have developed and increased the frame and the flesh-producing qualities, whilst the fleece has also increased in size and weight, though at the expense of firmness and curl of hair, which constitute the properties of fine clothing wool. In Sweden, the uncongenial climate has effected the reverse, and changed the Spanish merino into a small, and in all respects indifferent, animal. The Spanish merino was first introduced into Saxony in the year 1765, when a flock of 102 rams and 128 ewes, increased, in 1779, by 55 rams and 169 ewes was presented by the Crown of Spain to the then Elector of Saxony—a circumstance from which is derived the denomination of "Electoral wool," 1st. 2d. Electa, in sorting, &c.—and by him located on his domains of Stolpen and Lohmen. These flocks, which were of the very best breed, and, so called, royal blood, are the source from which the whole family, not only of the Saxon merino, but also all the fine clothing-wool sheep in Austria, Silesia, Russia, (Odessa,) &c., and the countless flocks of Australia, have sprung, to the entire extinction, in some of these countries, of the aboriginal sheep. As it happened, the climate of Saxony proved to be extremely well adapted to these animals, for the wool produced from them soon became renowned for its fine clothing properties, so as speedily to eclipse the wools of Spain.

Thus, we find the exports from the respective countries of merino wool amounted to:



| | From Spain and Portugal. | From Germany. |
|---|---|---|
| In 1800 | 7,794,700 pounds. | 421,350 pounds. |
| At prices of about | 10*s.* per pound. | 7*s.* per pound. |
| In 1814 | 9,234,990 pounds. | 3,595,100 pounds. |
| At prices of about | 7*s.* per pound. | 9*s.* 6*d.* per pound. |
| In 1827 | 4,349,600 pounds. | 22,001,190 pounds. |
| At prices of about | 4*s.* per pound. | 13*s.* per pound. |

The proportionate quantities of Merino wool exported from these countries were:

| | From Spain and Portugal. | From Germany. |
|---|---|---|
| In 1838 | 1,814,000 pounds. | 27,500.000 pounds. |

The great profit from raising Saxon merino wool soon attracted the attention of landed proprietors in Saxony, indolent even as they were in matters of agriculture at that date, and the cultivation of sheep rapidly increased in Saxony, and extended to the neighboring countries of Austria, especially to Silesia, which, next to Saxony, produces the merino sheep in greatest perfection, exceeding, even now, in fineness of wool and exquisite staple, though unequal in some other respects. At the first, sheep-breeders crossed the Spanish merinos obtained from the Electoral flocks with the common country sheep, but the result was a failure, and experience soon proved the advantage of breeding pure merinos only, to the exclusion of other blood.

The time has now long since passed when the Saxon merino sheep, into which the Spanish merino was transformed, became a type, an animal of such fixed and permanently impressed properties as to form a particular kind of its species, and an independent race of sheep.

The late father of the writer, Maximilian Speck, Baron von Sternburg, was among those whose interests have been most closely connected with the history of the Saxon merino sheep.

Since the very commencement of the export trade in Saxon merino wool, previous even to 1800, Maximilian Speck, of Leipsic, having risen through industry and self-education from the very humble condition of a small village inn-keeper's son, became a merchant in the article, and, through his establishments at London, Leeds, Aix-la-Chapelle, and other places, supplied the increasing demand in foreign markets. About the year 1820 he also became a breeder of these animals, and interested himself in their improvement. Large flocks of them were kept by him, principally on this estate, and were subsequently also introduced by him on his two estates in Bavaria, though with indifferent success. The original or parent flock continues to be carefully kept up on this estate, to this day, though, of course, in diminished numbers. From this flock were drawn, in 1824 and 1830, some of the first supplies of the Australian Agricultural Society, at a time when Australia, as a wool-growing country, was still in its infancy. The sheep were exported from this place, together with shepherds, to the Australian Agricultural Company's possessions, on the river Upper Hunter, in New South Wales, subsequently visited

by the writer. By desire of the Emperor of Russia, Alexander I, several small flocks, from the parent flock here, were introduced by Maximilian Speck, in person, into the neighborhood of Taganrog and Odessa, (in 1825 and 1828,) from which the vast flocks of merinos in that part of Russia have in part sprung. Rams from this flock have, likewise, at different times, been exported hence to the United States, to the order of agents at New York; and so late as last year, the writer had the pleasure of forwarding a small flock of ten rams to Australia, selected here in person by that eminent stock-holder, Mr. W. J. Browne, of Port Gamble, Adelaide, South Australia, and of 13 Princess Terrace, Hyde Park, London, who was then on a visit to the different sheep-farming establishments in Germany, and gratified the writer by his assurance that, for pure blood and constancy, evidenced by uniformity and other essential breeding qualities, he had not found this flock to be surpassed anywhere.

I now proceed to give you a short account of my method of keeping these sheep, with attendant remarks. Their breeding being no longer so profitable here as to induce it, to the exclusion of other stock, the flock has been reduced for some years past to about 1,200 head, in the proportion of about 600 ewes, 80 to 100 rams, 250 to 300 lambs, and the rest wethers and yearlings. These are kept in one large stable, about 110 English yards long, 21 yards wide, and 9 to 10 yards high, built massively of brick, with pillars supporting a roof of strong wooden rafters, the whole forming a large, airy saloon, well ventilated by windows and air-holes near the top, to be opened or closed according to the weather and the season. The rams, ewes, lambs, &c., are all separated, divisions being contrived by sheep-hurdles, which, as well as the whole of the stable-furniture, are light and easily movable. The hurdles are supported by stakes, which are driven in the floor at pleasure. Subdivisions of any size can thus be made quickly within the stable. The fodder-racks and troughs are very simple and practical, and could not be improved upon; but it would lead too far to enter into a description of them here. From the roof are suspended iron wicker-work baskets containing rock salt, necessary to keep the animals in health, and which they can lick at pleasure. Above the stable is contained the hay and straw loft, separated by wooden flooring, covered several inches thick with beaten clay, impervious to the exhalations underneath. From this loft the fodder is passed, through trap-doors and slides, to the stable below. The litter remains in the stable from 4 to 6 months at a time, sometimes attaining a height of 3 to 4 feet. Every day a little clean straw is laid down, which becomes mixed with the excrement of the sheep, and is compressed by them into one solid mass, forming the floor, which is perfectly dry, healthy, and sweet. The consolidated manure thus formed is not the least of the profits derived from the sheep. No other farm-yard manure is equal to it, and for turnip-crops, and especially for rape-seed, it is the very best fertilizer, as, not being exposed to the open air, and being well compressed, it retains its ammoniacal properties. The sheep are stabled all the winter, generally from the beginning of November until the middle of April, according to the season. As soon in spring as the weather permits and the grass begins to grow, they are taken



out to graze, in separate flocks, at from 9, a. m., to 12, m., and again at 3, p. m., till near sundown. For field and stubble-grazing they are very useful, as they keep the land clean, freeing it from weeds. This advantage is so essential to the farmer that some of my neighbors, not keeping sheep, frequently request me to take mine upon their stubble. During the six to seven months they are stabled for winter, their fodder consists of nothing but straw, the best of hay, turnips, and "grains" from the brewery. Of straw, necessary to the ruminating process, pea and oat straw are the best; next, barley and wheat straw. Rye straw is only given when other straw is exhausted. At the close of the harvest, a calculation of the probable requisites of fodder for the live stock, including the sheep, during winter, is made, as regards the sheep, on the following basis:

*One-thirtieth part of the weight* of the live animal in good hay is considered necessary, per day, for its sustenance. According to the quality of the fodder, and its abundance or scarcity, this may be increased to $\frac{1}{28}$ part; but less than $\frac{1}{30}$ part ought not to be given. Taking good meadow hay as the fodder-standard, a ram should receive about $3\frac{1}{2}$ pounds per day, a ewe about $2\frac{3}{4}$ pounds per day, yearlings, &c., in that proportion—taking the average of a full-grown ram at 110 pounds, of a ewe at 82 pounds, the weight of each varying, according to age, size, and condition, between 105 and 125 pounds, as regards the full-grown rams, and from 70 to 85 pounds, as regards the ewes. The weight of a wether varies between 80 pounds in lean condition and 110 to 115 pounds if strong and fat for the butcher. One pound of good meadow hay is considered equivalent to $1\frac{2}{3}$ pounds of oat, pea, wheat, or barley straw, 4 pounds of turnips, or 2 pounds of grain in the wet state, as daily delivered from the brewery, in winter. When the time of stabling for winter arrives, the sheep-master has his supplies of straw, hay, and turnips, allotted to him on the basis of the above calculation, and he is bound to make them serve out the proper time, under-feeding being as much guarded against as over-feeding and waste.

Straw is served out to all the sheep, but the lambs receive, in addition, hay only, the breeding ewes hay and turnips, grain being only given to the sheep set aside for fattening, and to the rams and yearlings in moderate quantity. Morning and evening the feeding racks are filled with straw, which, when "nibbled" out, is taken away and used for litter, a fresh supply being put in its place. Cleanliness, sufficiency, and due economy are the three considerations never to be lost to view.

Hereditary disease is unknown in my flock. Every lamb not appearing quite strong and healthy is killed when young. During the whole course of 40 years, epidemic disease has never made its appearance. The mortality from incidental disease and accident does not, upon an average, amount to more than two thirds per cent. These consist, almost exclusively, in a lamb being now and then crushed to death, and in death caused by rupture from distention, which, at the time of clover grazing, has to be much guarded against, especially in windy weather.

Each sheep is distinguished by a number, indicated by a small inci-

sion in the ear, made by an instrument, as soon as the animal is a year old. Early in spring, previous to the clip, and again in autumn, the ewes, rams, and yearlings are carefully sorted by myself and the sheepmaster, jointly, and the character of each sheep taken down, thus:

*Covering register.*

| Ewe. | Fineness. | Size and stature. | Fleece and staple. | Age. | Ram |
|---|---|---|---|---|---|
| No. 810 | Supra or I. Electa, as the case may be. | Middle size, well formed. | Rather long; too open on back. Falls off about the haunches. Wiry character. | 3 years. | To be put to No. 4 or 1. |

If found too old, or otherwise objectionable, the number is crossed out, (to be substituted by a yearling,) and the animal thus rejected is marked for fattening, to be sold to the butcher.

For the purpose of covering, I keep five standard rams, besides two or three reserve rams. These are pent up in stalls, separately, and thus selected: No. 1, for its great degree of fineness and beauty of staple; No. 2, for the softness and mild nature of the wool; No. 3, for its size; No. 4, for its closeness of staple, evenness, and weight and size of fleece; No. 5, for its evenness and length of staple.

The reserve rams are set aside for similar good points, but none are taken for covering, the wool of which is not at least a I. Electa. The lambs are sorted and classed at one year old. For sale, for breeding purposes, the one year old ram is generally chosen. It ought not to be used for covering until from one and a half to one and three fourths years old, and is in its prime until four years old, but can be used until seven to eight years old. At two and a half to three years old it is full grown, and may then cover from sixty to seventy-five ewes a season, and from six to eight ewes each day during the season. The season for covering commences about the 1st of August or September, and lasts about a month. Ewes are not covered until two and a half years old. At covering-time, a trial ram, having its genitals tied over with a linen apron, is constantly admitted to the ewes, and directs the eye of the sheep-master to such as are in season, when they are taken from the herd and put to the standard ram previously selected for them and indicated in the covering register kept for the purpose. The study, of course, is to put a ewe deficient in a certain point or points to a ram distinguished for its perfection in these points, and thus to neutralize the shortcomings of one by the opposite extremes of the other. Breeding "in and in" may be carried far with sheep, without bad effects, but it has its limits. I introduce fresh blood to the extent of about five per cent. every year. For this purpose, I choose a ram, every four or five years, from some other standard Saxon merino flock, most likely to harmonize with mine. Mere fineness of hair has long since ceased to be the principal object aimed at. What we now endeavor to breed is, "a sheep of the greatest possible size of carcass and flesh



qualities, which, in the merino sheep, are compatible with fine clothing wool properties; no sheep to be below I. (in case of exception, only II. Electa,) and to have a fleece of at least two and one fourth pounds in weight."

It is an easy matter to breed for excessive fineness only. With a flock like mine, I have this so much in my control that I could, if so disposed, very greatly increase the degree of fineness, within three or four years, by crossing for that purpose only. The size of the carcass would then decrease, in proportion, to a certain point, and the weight of the fleece eventually dwindle down 1½ to 1 pound, as is the case with some fine Silesian flocks. On the other hand, the carcass of the Saxon merino sheep cannot be increased beyond a certain size, unless at the expense of the staple, which, when the proper point has been exceeded, invariably becomes open on the ridge of the back, and what is called towy; the fleece, as it were, refusing to accommodate itself to an undue size of carcass. The practical experience of the breeder alone, joined to a knowledge of his flock, can offer a secure guide in the matter of judicious crossing.

The staff of servants attached to my flock consists only of one sheep-master and two assistant shepherds, besides occasional farm-hands, as may be required. During the grazing season, indeed, our excellent sheep dogs do half the shepherds' work, their instinct and training being wonderful.

As regards the prices I obtain for my sheep: The wethers, when fat, bring from 21*s.* to 26*s.* each; the ewes, fattened for the butcher, from 16*s.* to 21*s.* each. Breeding ewes are rarely sold, except for export. Their price is from £2 to £5, according to age, perfection, and fancy. Rams for breeding purposes vary from £2 10*s.* and £3 to £10 each. Picked yearling rams, for exportation, in flocks of from six to ten, or upward, £6 to £8 average price. Single rams of great excellence I have occasionally sold as high as £20, and even £30, but these were exceptional cases. Indeed, fancy has a great deal to do with the prices of fine stock. Provided a flock be of undoubted purity of blood, long standing, general excellence, and evenness of character, the probability is that any good ram from it will, if crossed with ewes from the same flock, produce sheep equal to it; and the chances are that a "fancy ram" from the same flock will not produce anything superior to the other, either from ewes of the same flock, or if crossed with others. Very extravagant prices are sometimes paid by fanciers for individual rams of great beauty, especially where the animal is for export; and the foreign fancy buyer will not be satisfied of the good quality of his purchase unless he has paid a high price for it. But, let it be remembered, single rams of great individual beauty are generally a mere *lusus naturæ*, a sport of nature, and often spring from flocks having less constancy of breed and blood, and by no means very reliable, but quite the contrary, for the reproduction of their own perfections. They are, in fact, show animals.

The prices I realize for my wool vary from 2*s.* 8*d.* to 3*s.* 2*d.* Last year I sold at 3*s.* 1*d.* This year, the market being depressed, I sold at 2*s.* 9*d.*, as clipped from the sheep, locks and all. The weight clipped this year amounted to:

From the ewes on the average..... $2\frac{7}{16}$ pounds each.
From the wethers on the average..... $2\frac{1}{2}$ "
From the yearlings on the average ..... $2\frac{5}{16}$ "
From the full-grown rams..... 4 to $6\frac{7}{8}$ "

I generally sell my wool, by private bargain, to France or Belgium, the best market for such wools, as best adapted for the fine, yet strong and sound fancy woolens manufactured there.

I conclude by giving a short sketch of my farming estate here. It is of medium size, consisting of about 650 English acres, of which about 90 acres are meadow land, 60 acres park and forest, 20 acres cultivated with hops, 20 acres yards and gardens, and the rest under the plow. The arable land is chiefly a good sandy loam, a small river running through the estate. It is divided into 14 principal parcels, or allotments, of from 20 to 50 acres each, and on this division is based a system of succession of crops. In this systematic arrangement for a constant change of crops on the same soil or field consists the most important improvement of modern agricultural science. Thanks to it, the productiveness of land in this part of the country, generally, may be stated to have been augmented by at least 20 per cent. as compared with the old slovenly mode of farming land, still in vogue with many of our peasantry, whom it is extremely difficult to prevail upon to depart from the way of their fathers. Having regard to the nature of your soil, and to your experience of it, you have so to arrange your crops as to bring about, systematically, constant suitable changes between agricultural plants of different vegetation, the rule being to cause opposites to succeed each other, and not to bring grain twice on the same field successively. Thus, for instance, wheat is the best possible successor, on the same field, to rape-seed, the latter drawing different chemical components from the soil, and imparting and leaving others most conducive to a good growth of wheat. Science has laid down certain rules in the succession of crops for the observance of the farmer, and the year, of course, known to you, still it may be of interest to quote my table of succession, "the law of my farm," which is never allowed to be departed from.

*For* 1859.

Field No. 1. Rape-seed, (25 loads, of 25 cwt. each, of farm-yard manure, per acre.)
Field No. 2. Wheat.
Field No. 3. Potatoes.
Field No. 4. Barley.
Field No. 5. Rye, (18 loads, of 25 cwt. each, of good manure, per acre.)
Field No. 6. Awelrape-seed, with buckwheat and stubble, turnips before and after.
Field No. 7. Oats.
Field No. 8. Turnips, (32 loads, of 25 cwt. each, of best stable manure, per acre.)
Field No. 9. Winter or summer wheat.



Field No. 10. Clover, for green fodder and hay.
Field No. 11. Rye.
Field No. 12. Peas $\frac{1}{2}$, beans $\frac{1}{2}$, highly manured.
Field No. 13. Oats $\frac{1}{2}$, rye, $\frac{1}{2}$.
Field No. 14. White clover, for pasturage.

In 1860, the crop, which in 1859 was on field No. 2, will be on field No. 1, and so on, in constant yearly rotation. I have, besides, some land set apart for lentils, mangold-wurzel, Indian corn, caraway seed, &c., and for lucern, a most valuable green crop in this climate. A change of seed is frequently made, and I often import, with a small extra cost of freight, and to great advantage, seed of the best kind from England.

All the crops are housed in barns, stacks are only made in case of great need. The grain is threshed by two threshing machines, one on "Garrett's" principle, the other on a Swedish model, both driven by working oxen. The sowing is done partly by hand, partly by the "Albanian" (American) sowing machine.

My live stock consists, at present, of about 1,150 sheep, about 62 head of cattle, (exclusive of 12 working oxen,) chiefly of the Bernese (Switzerland) and the Allgau (Tyrolese) breed. I have lately imported some English short-horns, of the best blood, with which I intend to cross, and expect a good result. I also keep about 80 pigs, of the common country kind, as well as Essex and Yorkshire middle breed. With these I cross the country or indigenous pig, which is rather lean, narrow, and bony, but the flesh of which is finer than that of the English breeds. By making one or two crosses, I produce a very excellent pig for the butcher, (who does not like the pure English breeds,) which fattens easily, and yet is not deficient in fine flesh. I obtain from 36*s*. to 41*s*. per cwt., living weight, for my pigs. This pays me so well, that I am about to alter my arrangements, and to make room for double my present stock of pigs.

In close connection with the farm, I have two technical establishments on the spot, namely: a brick work, the clay for which is found on the place, and which turns out 1,250,000 bricks per annum, and a brewery, producing about 160,000 gallons of Bavarian beer per annum, which is chiefly consumed in the neighboring towns and villages. I need not point out to you that the grains and malt-dust from my brewery are a most material accessory to my means for feeding the stock, and that the refuse enriches the manure heap.

To work the whole estate, I keep thirteen pairs of horses and six pairs of working oxen, their labor being always so arranged and disposed of as to concentrate it where most required at the time. Thus, at present, during harvest, nearly all are employed in hauling and threshing grain and doing other harvest work. During winter, when the earth is frost-bound, all are busy carting clay, on easy roads, for the brick-works, and so on. One branch, or department, must always help on the other, as best it may. I grind my own flour, bake my own bread, and kill my own meat, and have my own coopers, blacksmiths, wheelwright, and carpenter, on the place, so as to be independent of the tradesman, and to have their labor at hand when required. When nothing else is to be done, the coopers make casks in store, the black-

smiths and wheelwright work at new carts and implements; neither time nor labor is lost.

The price of land here, owing to the neighborhood of a large town, is rather dear—from £40 to £60 per English acre, arable land. Taking this in consideration, and the value of live and dead stock, buildings, and floating capital, I realize, in an average of years, a net interest of five and a half per cent. on the capital represented by this property, after allowing ten per cent. per annum for deterioration of dead stock, and two per cent. on buildings. This is no great interest, certainly, but a safe return, and combining an agreeable occupation with an independent and comparatively inexpensive country residence. The whole is conducted, under my supervision, by an able manager, with a staff of under-bailiffs and servants. Minute accounts of everything are kept, in sets of books arranged for the purpose, in charge of two clerks. I may add that there is also an agricultural school on the estate, licensed by government, where young men above eighteen years of age can learn something theoretically and practically about farming. It is a private undertaking, with which I am in nowise connected, except that it exists at my sufferance, the pupils profiting by what they may learn on the farm.

I shall be glad if you find anything to interest you in my letter. If so, may it serve as some apology for its length.

Believe me, dear sir, yours most truly and respectfully,

ALEXANDER SPECK VON STERNBURG.

His Excellency Joseph A. Wright,
*American Minister at Berlin.*

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## SPLEEN IN SHEEP, AND ITS PREVENTION.

[Condensed and translated from the German.]

Different opinions prevail as to the causes, preventives, and remedy of this destructive evil. Generally, however, little or nothing has been done to prevent or check the disease. Many resort to medicaments of infusion, which process proves of no avail; others, when the disease has made its appearance among their flocks, deny it, or pretend to have suppressed it in its very outbreak. But all these mysteries cannot be attended with any benefit.

For the most part, the well-fed animals are affected by the spleen or milt-disease. They are seen dropping their heads, breathing laboriously, and moving their sides with great force and rapidity. They show uneasiness and dullness, others, however, are excited, and appear to be lively. The latter, as a general rule, are first stricken down with the disease. According to observations made by Dr. Wagenfeld, the skin is of a red appearance, passing somewhat into bluish, and the white of the eye presents a dark-blue stroke, passing into yellowish or brownish at the lower edge, the blood-vessels being of a dark-red color, and inflated. Yet, with many animals, there are no particular symptoms of disease to be observed; they stagger while grazing, and fall down as dead.



It is only by duration of the disease that the symptoms assume a more decided character. Melancholy, want of certainty in their steps, keeping behind the flock, abstaining from eating, dullness and loss of all sensation, are followed by heat and dryness about the mouth, tongue, and nose; their ears are cold, the pulse hard, and their looks fixed and staring. After a longer process, the pituitary membrane, both of nose and mouth, becomes blood-red, the latter exhibiting bloody foam, and violent gnashing of the teeth. The excrements are mixed with blood, and ulcers make their appearance about the neck and other parts of the body. The animals begin trembling, fall, are seized by fits, the white of the eye becoming red, and the eye-ball projecting from its cavity. If the progress of the disease is going on still slower, the breathing is performed in long and irregular intervals, blood is secreted from the nose and other orifices, and the urine is of a blood color, when death ensues, amid violent convulsions.

The disease is usually of such rapid character that often but few minutes intervene from its supposed commencement until its termination in death. A small number of animals thus attacked will live as long as from ten to thirty-six hours.

This rapid progress of the disease makes it extremely difficult to discern it, especially as the animals continue eating until they fall down. Decomposition speedily commences, developing most offensive odors.

The following are the results of dissection: The stomach is distended with offensive gas and food; the small intestines present an inflammatory appearance; the liver is tender, and overflowing with corrupt bile; the milt is swollen, soft, ulcerous, and often bursting; the brain is filled with blood; every part of the dead body emits a foul smell, the inside of the skin being always dark, and of a bluish-red color, caused by the blood beneath.

This plague is dangerous both to men and animals, not always, however, evincing the same power of contagion. In proportion to the slower or more rapid progress of the disease is the influence of its contagious nature; though sometimes there is nothing of this kind to be apprehended, when the animal dies very quickly, which is the reason why, in certain cases, only a few sheep are lost without the disease spreading further. In a slow progress, however, the contagion reaches the highest degree.

Those animals which die after a slow progress of the disease should be buried as deeply as possible, together with all their blood, foam, and the filth hanging about them; of those which die after a rapid progress, the skin may be taken, but the inner side of it should be immediately strewn with salt, or with lime-dust, which would be still better.

This disease makes its appearance most frequently in the summer months, and oftener in warm than in cold countries.

According to observations made by Mr. Reidemeister, of St. Petersburg, it is generated by great heat and dryness; by dusty pastures and the dust raised by the wind, which the animals incessantly draw in; by rough treatment, and by over-feeding and fattening. Previous disorders of the abdomen may also be looked upon as among its causes,

as the milt, on account of its abundance of blood, is more affected than other organs. The principal causes, however, are found to exist in the watering places, inasmuch as the sheep are in the habit of drinking from stagnant and foul ponds.

In a disease so rapid in its progress, a special treatment of the several affected animals may be out of the question, though the most valuable may be subjected to such care. In this, we must first look at the nature of the disease. If there are symptoms of great heat, both about the mouth and horns, as well as a difficulty of breathing, we should bleed the neck of the animals until they faint, pour cold water on them for from eight to ten minutes, in intervals of two minutes each, and put bandages around them, of the breadth of six fingers, soaked with turpentine oil and strewn with the dust of blister-flies. Internally, they should receive, in half a glass of water, from two to three drachms of camphor, finely pulverized and dissolved with spirits; to this should be added from one and a half to two drachms of sulphuric acid, or, still better, some tincture of iron mixed with the water. Of this mixture the animals should be given a dose every hour. If there are any signs of recovery after the lapse of twenty-four hours, the mixture should be given only twice or thrice a day until they are completely restored. The boils should be cut and cleaned of the matter they may contain, after which the wound is to be washed with a mixture of water, vinegar, and kitchen salt. We must be careful in cutting them, so that the poisonous matter may not touch either the face or hands, which, as a protection, should previously be well oiled, or greased.

The following rules may be laid down to prevent the disease:

The sheep should not be kept in too fat a condition.

In the summer months they should not be exposed to the burning heat of the mid-day sun.

All running and chasing should be avoided; they should be led, and treated in a mild and gentle way.

They should be provided with new pastures every week.

They should not be allowed to graze in the neighborhood of dusty roads, frequented by carriages, so as to inhale the dust.

They should not be allowed to rest in valleys and low places, but only on heights, where they may enjoy the comfortable breeze, undisturbed by insects.

To deprive the milt disease of its contagiousness, the lambs should be kept warm in winter; for it is the severe cold, stormy, sharp, and changeable weather, that creates the germ, and which, if favored by circumstances, is very apt to assume the character of contagious disorder during summer.

Healthy sheep should not be allowed to come in contact with diseased ones.

Give them always pure water to drink; the greatest advantage would result from well-water containing iron.

At the appearance of any symptoms of disease, the sheep should be removed from their pastures as far as possible.

They should also receive proper medicines in the latter part of May.

For this purpose a mixture should be used, consisting of one part of wormwood, (*Artemisia absinthium,*) one half of juniper berries, (*Juniperus communis,*) one part of gentian wort, (*Gentiana,*) one half of saltpeter, (nitrate of potassa,) one part of kitchen salt, and one part of bitter salt, (Epsom salt.) These ingredients, finely pulverized and mixed with eight or ten parts of bran, must be given to the sheep to lick.

A cheaper mixture consists of one part of wormwood, (*Artemisia absinthium,*) one part of gentian wort, (*Gentiana,*) one half part of saltpeter, (nitrate of potassa,) one part kitchen salt, one part of bitter salt, (Epsom salt,) one half part of vitriol of iron, and one part of tar. After a fine pulverization of all the ingredients, they are to be mixed with fifteen or eighteen parts of pure loam, and well worked. Of this mixture loaves of from fifteen to twenty pounds are formed, and dried in a moderate warmth, when they will be put in accessible places to be licked by the sheep.

If all these preventives prove ineffectual, the application of chloric water is highly recommended. For one hundred head of sheep, one part of chloride of lime is dissolved in water, and poured into the troughs. The animals should be induced to drink the chloric water by a dose of pure salt, given to them to be licked some hours before.

Mr. W. Reidemeister recommends the vitriol of iron as an effectual preventive. It is to be dissolved in the water intended for drinking. In other diseases of domestic animals, especially the atrophy of cattle, the tumor of horses, and even the diseases of poultry, it has been found a reliable cure.



# ON THE PRINCIPAL PLANTS USED AS FOOD BY MAN.

## SKETCH OF THE PLANTS CHIEFLY USED AS FOOD BY MAN, IN DIFFERENT PARTS OF THE WORLD AND AT VARIOUS PERIODS.

BY DR. F. UNGER.

[Translated from the German for this Report.]

Nothing has had so powerful an influence in changing the nature of the savage as becoming accustomed to a bloodless food derived from the vegetable kingdom. It is true, that plants contain the materials of the blood and flesh, but nutriment derived from plants is very different from that derived from animals. Instead of a deadly struggle for existence, the vegetable world freely yields up its best gifts without being essentially impoverished itself. The kernel, the ripe fruit, the tender, juicy sprout, the marrowy substance of the mushroom, even the farinaceous tuber and root, in their season of perfection and fitness for the use of man, usually only precede the period of their unavoidable decay and decomposition. That which is derived from the vegetable